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Founded 1858.

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# The London Naturalist, 1945.

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## Editorial.

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*The London Naturalist* and its supplement *The London Bird Report* are published yearly, and provide a record of the activities of the members of the London Natural History Society and other London naturalists. Contributions are welcome from members of the Society on any natural history or archaeological subject and, if space permits, from non-members on any aspect of the natural history or archaeology of the London Area. The London Area, as defined by the Society, is comprised within a radius of twenty miles from St Paul's Cathedral, and includes the whole counties of London and Middlesex, together with parts of Bucks, Herts, Essex, Kent and Surrey. A map of this area is obtainable from the General Secretary, price 2d. All papers intended for publication in the *London Naturalist* or the *London Bird Report* should be submitted in the first instance to the Secretary of the appropriate Section (addresses on p. 86), and not directly to the Editor.

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## Nature Reserves.

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THE Society's Nature Reserves Investigation Sub-Committee resumed meetings at the close of 1944, and the recommendations were studied in relation to the Greater London Plan, which was published early in 1945. Considerable revision was found necessary, both in classification according to the categories of reserves suggested by the parent Committee and in the delimitation of boundaries. The latter modifications were embodied in a set of maps sent into the parent Committee. A number of the areas recommended by the Society were considered to be of national importance and scheduled as National Reserves by the parent Committee in its Reports on National Nature Reserves and Conservation Areas, and on National Geological Reserves published during the year.\* The Sub-Committee consists of Messrs L. J. Tremayne (Chairman), C. P. Castell (Secretary), Austin, Fitter, Spooner and Tucker.

C. P. C.

\**National Nature Reserves and Conservation Areas in England and Wales*, December 1945, 3s; *National Geological Reserves in England and Wales*, September 1945, 1s 6d. The Society for the Promotion of Nature Reserves, British Museum (Natural History), London, S.W.7.



## William Curtis (1746-1799).

By J. EDWARD LOUSLEY.

(The bicentenary of the birth of this famous naturalist, whose work exercised such an important influence on London botany, was celebrated by a special exhibition at Alton, his birth-place, opened on Friday, January 11, 1946, and by a commemoration meeting and memorial service at Battersea, where he was buried, on the following Saturday and Sunday. The appreciation of his life and publications which follows is the substance of an address given at the meeting at Battersea, of which an account has also appeared in the *Journal* of the Royal Horticultural Society for April and May 1946.)

CURTIS is best known as the author of *Flora Londinensis* and as the founder of the *Botanical Magazine*, two works which have exercised a very great influence on the progress of botany and which are much sought after by collectors of fine books. He has also a number of less important botanical and entomological works to his credit, including papers published in the journals of learned societies, but his influence over a wide field of science was much greater than might be supposed from a list of his publications. It is not surprising that a considerable amount of biographical material has been published about Curtis, but, as is so often the case, much of this is mere repetition and most of the accounts contain obviously unreliable or conflicting statements. Probably the most accurate Memoir is the one by his son-in-law, Samuel Curtis, included in the first *General Indexes to the Plants . . . of the Botanical Magazine* issued in 1828, but this conflicts in various important particulars with the *Sketch of the Life and Writings . . .* published by his friend Dr Thornton in 1805. I have therefore endeavoured to base the substance of this account as far as possible on William Curtis's own published works and the series of letters from his friends in possession of the Curtis Museum as published in Mr W. Hugh Curtis's valuable book, *William Curtis*, issued in 1941.

Curtis was born at Alton, Hampshire, on January 11, 1746, in a house in Lenten Street which may still be seen. His father was a tanner in fairly comfortable circumstances and William apparently received a moderately good education. On leaving school he was apprenticed to his grandfather, a surgeon-apothecary whose house adjoined the Crown Inn at Alton. It so happened that there was an ostler at "The Crown" named Thomas Legg who had a good working knowledge of wild plants, and to him Curtis was indebted for encouragement in the study of botany. It is not known whether he received any help from the now famous Rev. Gilbert White, who was then curate of Faringdon within easy walking distance of Alton, but the fact that Curtis belonged to a Quaker family may well have kept them apart. However that may have been, we know that later in life Curtis was on excellent terms with Gilbert's brothers Benjamin (the publisher) and Thomas.



At about the age of twenty William Curtis was apprenticed to Mr George Vaux, an apothecary in Pudding Lane in the City of London, and shortly afterwards he moved to Mr Thomas Talwin, another apothecary, at 51 Gracechurch Street. This remained his "permanent address" for many years and the Corporation of London has placed a tablet on the building which now occupies the site. Curtis duly qualified as an apothecary and when Mr Talwin died and left him the practice he carried it on for a period with moderate success. But his heart was not in medicine and in order to have more time to devote to the study of insects and plants he took William Wavell into partnership and shortly afterwards sold him the practice about the end of 1770, although he continued to reside in the house.

Curtis then took a piece of ground near Grange Road, Bermondsey, not far from the modern Bricklayers' Arms railway goods station, for the purpose of growing British plants. On December 15, 1773, he was elected to the honourable office of *Demonstrator of Plants and Praefectus Horti* of the Society of Apothecaries. His duties were chiefly connected with that little gem of a botanic garden now known as Chelsea Physic Garden, which has played such a great part in the history of British botany. The pay was small but the man who occupied such an important post was well situated to gain a wide reputation as a botanist and by the time he resigned on August 27, 1777, this object was substantially achieved, and the publication of the *Flora Londinensis* had commenced. On January 1, 1779, Curtis started a new venture with the official opening of the London Botanic Garden in Lambeth Marsh. For one guinea a year subscribers had the right to use the garden and the library and to introduce a friend. For double the subscription they might receive surplus seeds and roots. Doubtless Curtis was able to obtain other fees for lecturing but his income must have been slight for a man who was losing money on his publications. The garden was transferred to Queen's Elm, Brompton, in 1789, two years after the publication of the monthly serial known as the *Botanical Magazine* had commenced. This new periodical was such an outstanding success that its founder was able to finish his days free from financial worry, and when he died of heart trouble on July 7, 1799, he left his wife and daughter reasonably well provided for.

I have mentioned Curtis's gardens at Bermondsey, Lambeth, and Brompton, and in addition it appears from his correspondence that he had a smaller reserve garden at Charlton for a time. We know a good deal about two of these gardens and especially about the one at Lambeth, of which a lengthy catalogue was published in various editions. The author's opening words in the 1783 edition are worth quoting as exemplifying his guiding principle, which he endeavoured to carry out in all his ventures:—

"It must be allowed, that all human knowledge ought to be subservient to the good of society, and in proportion as this is advanced by any science, so ought that science to be held in esteem."

For the good of society and by application of his medical knowledge a large section of the garden was devoted to growing the medicinal plants of the London and Edinburgh dispensaries. Another section was used for culinary plants and yet another for poisonous plants. Plants useful and also those noxious to agriculture were represented, while about a thousand native British species were grown. Curtis was extremely interested in the use of the best grasses in agriculture, to which he devoted one of his oft-repeated lectures, and a small book which ran through several editions. He sold collections of grass seed at the Gardens, and it is possible that his influence in persuading agriculturists to grow the more useful species instead of "any old grasses" was of greater importance than is generally realised. He also prepared an exsiccata of grasses for sale under the title of:—

"*Hortus Siccus Gramineus*, or a collection of Dried Specimens of British Grasses with their Latin and English names from the best authorities, The whole classed according to the Third Edition of Practical Observations on Grasses, by William Curtis," which was "Sold properly arranged by Curtis and Salisbury, at the Botanic Garden, Brompton." The two volumes of this publication at Kew are dated 1802, so it is posthumous. This set of grasses has not been mentioned by any writer on Curtis, and would well repay careful examination by an agrostologist. The practical side of botany was well served in all his works and the uses of plants in medicine, agriculture and commerce were carefully noted. His last publication was a pamphlet on Sea-Kale, which he endeavoured to popularise.

As a lecturer Curtis must have exercised a very considerable influence on late eighteenth century botany and it is fortunate that the substance of some of the set lectures he delivered in his gardens has been preserved. In 1788 he issued a small book which was evidently intended to be the first of a series and entitled "*A Companion to the Botanical Magazine* or a familiar introduction to the study of Botany, being the substance of a course of lectures, chiefly explanatory of the Linnaean system, read at the Botanic Garden, Lambeth-Marsh, by William Curtis, Author of the *Flora Londinensis*. Now first published in the Form of a Dialogue betwixt a Pupil and his Precentor, and illustrated by figures entirely new." The only copy of this which I have seen contains a chapter headed "On the Structure of the Seed, and the Process of Vegetation"—it may have been the only part published at this time. After his death his son-in-law Samuel Curtis issued a work entitled "*Lectures on Botany* as delivered in the Botanic Garden at Lambeth by the late William Curtis, F.L.S. . . ." which was compiled from the original notes. This finely illustrated publication was apparently issued in twenty-four monthly parts at 2s 6d a number. I have seen the undated wrapper of No. 5 which is significantly also headed "*Companion to the Botanical Magazine*," and the eight coloured plates included in the earlier work were used once more in the "*Lectures* . . ." which when completed were bound into three volumes all dated 1805.



The evident enthusiasm which suffused these lectures and the kind of audience to which they were directed would appear to me to be the probable reason why Curtis resigned his position as Demonstrator of Plants to the Society of Apothecaries. He had a secure appointment bringing in a salary of probably £37 10s per annum with certain small additional emoluments and ample time to earn more income by any other means he chose and yet he resigned this much coveted office to rely for a living on the uncertain profits of the botanic garden which he was planning. It would appear to me that Curtis may well have tired, as many a teacher has done since, of lecturing to medical students whose only interest in botany was often restricted to regarding the subject merely as a stepping-stone to qualification. The general public were not admitted to the Apothecaries' Garden and while he was anxious to cater for enthusiastic students he probably felt that he had a mission to teach all botanical enthusiasts and not just those who happened to be studying for a particular examination. This eagerness to address himself to the general public is likewise apparent in all his published works of importance.

Curtis is best known to-day as author of the *Flora Londinensis* and founder of the *Botanical Magazine*, but although the later undoubtedly benefited science most in the long run, the production of the former was his greatest gift to botany in his lifetime. *Flora Londinensis* appeared in 72 " numbers " of elephant folio size, each containing six plates and six pages or more of accompanying letterpress, at the price of 5s a number for coloured copies or 2s 6d for plain. The plates were designed to illustrate all plants life-size and involved the use of a draughtsman to draw the plants, an engraver, and a colourist to paint in the printed plates by hand. Complete standardisation could hardly be expected and good copies were much sought after in Curtis's day and are even more in demand to-day, though it should be made clear that the standard of even the less well-coloured copies was high. Every twelfth number completed a " Fasciculus " and the work was usually bound up in two volumes of three " Fasciculi " each. Unfortunately many of the plates were not numbered and as lists of the plates arranged in Linnean sequence were issued with each completed " Fasciculus " and the binders were instructed to follow these lists, the sequence of the plates in the bound volumes is not that in which they were issued.

The first number of *Flora Londinensis* was published in May 1775, as stated by Pulteney in his copy of the first edition of Hudson's *Flora Anglica* now in the Library of the Linnean Society. This date was long in doubt but is confirmed by the letters from William Boys dated May 21, 1775, and from Dr William Hird dated June 13, 1775, now published by Mr Hugh Curtis in his book, where it also appears that " specimens " were circulated as early as the previous December. The plates included in the first number illustrated Scarlet Pimpernel, Flowering Rush, Bittersweet, Honeysuckle and Hart's-tongue Fern (*Anagallis arvensis*, *Butomus umbellatus*, *Solanum Dulcamara*, *Lonicera Pericly-*

*menum*, and *Asplenium Scolopendrium*), and in the copy I use it is noticeable that as a set they are inferior to the later plates.

The " numbers " appeared at erratic intervals and correspondents were constantly clamouring for the next issue. The work was never properly completed and the original issue ceased with the appearance of No. 72 in the autumn of 1798. After Curtis's death it was reissued with revised text by W. J. Hooker and additional plates in 1817-28, and again by H. G. Bohn also in five volumes in 1855. The issue of a delightful little *Abridgement* was commenced by Curtis but after only 36 most beautiful little coloured\* plates dated April 16, 1792, to March 16, 1793, had appeared, publication ceased..

The reasons for the financial failure of *Flora Londinensis* are not difficult to find. The price of 5s a number for coloured plates—or indeed 7s for copies coloured with especial care—was beyond the reach of many pockets in the eighteenth century. The great size of the book was awkward and it appealed to a very restricted public. From the scientific point of view the work received far less publicity and use than would have been the case if the plates had been numbered from the beginning to facilitate citation. But perhaps the greatest handicap was the irregularity of publication, for very few people will continue to subscribe to a serial when they are uncertain when the next part will appear and it is apparent that the book may never be completed.

The merits of the work deserved a better financial reception. The plan of illustrating all plants on a uniform scale—and life-size at that—was original and facilitated comparison. The accuracy of the plates was astonishing, especially in the case of those drawn by William Kilburn and Sydenham Edwards, and it is probable that it has never been exceeded. Moreover Curtis was accustomed to examine his plants under the lens and microscope, a habit which was by no means usual in those days, and he made his artists draw what he saw. The text included many new characters to differentiate old species and indeed a number of new ones. That the circulation never exceeded 300 copies is to be regretted but a less extravagant work might have received a better reception. *Flora Londinensis* was originally planned to include the plants found within ten miles of London and the author promised that if he " should be favoured with health, and meet with the necessary encouragement, it is proposed afterwards to publish a continuation of it, to extend to all the plants which are indigenous to Great Britain." Unfortunately Curtis was led to issue two " numbers " of plants not to be found in the environs of London before he had completed the primary project. Later on I will refer to some of the London plants he did include.

*The Botanical Magazine* was a very different story. As indicated by the subtitle, the " Flower-Garden Displayed," it " was to be a serial of plant pictures drawn and coloured from life. It excluded native plants but was open to any other plant as long as it was amongst the

\*This was also issued with plain plates.



“ most ornamental ” and in actual cultivation either in the open ground or in the greenhouse or the stove ” (Stapf). Each part consisted of three hand-coloured plates with explanatory text and cost one shilling. Monthly publication was continued regularly and it served its purpose of making “ plants already known to a few, known to many ” so well that circulation reached the high level of 3000! The convenient quarto size and low price ensured a good reception from horticulturists. The quality of the plates was good, but greatly inferior to those of the *Flora Londinensis*, and it should be noted that during Curtis’s life the periodical had comparatively little scientific value. The subjects chosen were showy popular plants and new species were hardly ever included and dissections and details were not separately shown. The work was one for popular gardeners and not for botanists.

After the death of Curtis the character of the *Botanical Magazine* gradually underwent a change and more and more new species were included until it became the recognised medium for novelties suitable for the garden. From being the work of a private botanist it became associated with the Royal Botanic Gardens, Kew, and thanks to the support of the Royal Horticultural Society publication has continued right down to plate 9666, issued on July 24, 1944, though the price of a part has increased to 17s 6d. The next part will appear shortly.

Of Curtis’s works on insects I am not well qualified to speak, and in any case they are dwarfed by his much larger botanical publications. He certainly had a fine knowledge of entomology which was highly respected by his contemporaries and indeed his first publication was the illustrated “ Instructions for Collecting and Preserving Insects . . . ” of 1771 of which a copy found its way into the hands of the great Linnaeus. He also had a good knowledge of birds, in which he seems to have become increasingly interested, and he even had drawings prepared of some of the specimens sent to him, doubtless in contemplation of eventual publication.

Curtis’s ambitious productions with their hand-coloured plates can only be properly understood if considered against the background of the times in which he lived. The age of cheap mass-produced machine-made goods had not yet arrived and yet the standard of living of a substantial part of the population was fairly high. It was a time famous for its craftsmanship and good taste and men delighted in producing articles which were the best that their skill could turn out. It was a time of war but the wars of those days affected ordinary people very little. The Seven Years War (1755-1761) was on during his school-days. The War of American Independence (1776-1782) covered part of the early days of the production of the *Flora Londinensis*. The long war with France broke out in 1793, and it is tempting to think that these wars may have resulted in some restriction in purchasing power available for extravagant works. It may help to make the period in which Curtis lived clearer, if I point out that he must have known Dr Johnson, who died in 1784, and that he lived just too soon to have known, as a national figure, Cobbett, who was born in 1762. The whole



of his working life fell within the reign of George III and his work and way of life were very representative of the times in which he lived.

The growth of London was still relatively slow, and the built-up area was still so limited that it was easy to walk out into the country for a day's botanising. Journeys farther afield could be made on horseback or by coach, and the conditions of the main roads had been made so good that coach travel was surprisingly speedy, so that it was possible for his friends to send up fresh flowers for examination from long distances. He was just in time to gather many rare plants within the range of an evening walk before they were covered with bricks and mortar. Thus the Yellow Marsh Dock (*Rumex palustris*) still grew in St George's Fields, though the Flowering Rush (*Butomus umbellatus*) had been lost through drainage. To the south-west of Westminster Abbey, Tothill Fields stretched away towards Chelsea and the Neat Houses Gardens, and in Tothill Fields Curtis found Marsh Yellow Water-cress (*Rorippa islandica*), Bird's-foot Fenugreek (*Trigonella ornithopodioides*) and Lesser Persicaria (*Polygonum minus*). The "Oak of Honour Wood (as it is generally called) a little beyond Peckham" must have been an interesting place with three St John's Worts (*Hypericum Androsaemum*, *hirsutum* and *pulchrum*) and Narrow-leaved Everlasting Pea (*Lathyrus sylvestris*).

The Dwarf Elder (*Sambucus Ebulus*) could be found in Lambeth Marsh, and the Milk Thistle (*Silybum Marianum*) near Kennington Turnpike and the little Mousetail (*Myosurus minimus*) about Islington, Paddington and Pancras. Yet Curtis often bemoans the reduction or loss of rare plants through drainage or building. His comments about the Lily of the Valley (*Convallaria majalis*) are comparatively mild:—"Like many of those plants which are eagerly sought after, it is now become rather scarce in the neighbourhood of London. In Mr Ray's time it grew plentifully on Hampstead-Heath, but is now sparingly found there. In Lord Mansfield's wood, near the Spaniard, it may be met with in greater abundance; nor is it uncommon in the woods about Dulwich." His remarks that the Bee and Early Purple Orchids (*Ophrys apifera* and *Orchis mascula*) had become scarce about London have a familiar ring, but his statement when dealing with Deadly Nightshade (*Atropa Belladonna*) that "The rage for building, joined to the numerous alterations perpetually making in the environs of London, have been the means of extirpating many plants which formerly grew plentifully around us" would be more fitted to a modern botanist! It is as well that Curtis did not know of the fate in store for his favourite plant localities!

Perhaps his favourite hunting-ground was Battersea and since this explains why he elected to be buried in this churchyard by the Thames it is appropriate that we should consider his records from here in a little more detail. His spelling of the place name was erratic and sometimes he used only one "t" and more often two. This was not a case of careless proof-reading or lapses in spelling for, as we are reminded by the title of Dr J. G. Taylor's fine work *Our Lady of Batersey*,

it was once customary to use only one "t", and Curtis happened to write just at the time when the change to the double consonant was being made. In the first volume of *Flora Londinensis* there are only three Battersea records—in the second no less than twenty-four occur, and it must be remembered that localities are only given for the rarer plants. The increased number in the later parts of the work is doubtless attributable to his removal to Lambeth Marsh which reduced the double journey by four or five miles.

Records of water-plants make up a large proportion of those from Battersea Meadows, which were intersected by ditches and creeks. These included a St John's Wort (*Hypericum quadrangulum*), Sneezewort (*Achillea Ptarmica*), a Marsh Orchis (*Orchis latifolia* L. sec Pugsley), Bistort (*Polygonum Bistorta*), Large Bitter-cress (*Cardamine amara*), Narrow-leaved Reed-mace (*Typha angustifolia*), Small Marsh Valerian (*Valeriana dioica*), Cottongrass (*Eriophorum angustifolium*), Bog-bean (*Menyanthes trifoliata*), Amphibious Persicaria (*Polygonum amphibium*), and Meadow Cranesbill (*Geranium pratense*), while another water-loving plant (*Sparganium simplex*) he says "Abounds on Battersea Common just before you enter Wandsworth on the left hand side from London."

Battersea Fields, which he says "exhibit bad husbandry in perfection," produced Chicory (*Cichorium Intybus*), two Poppies (*Papaver dubium* and *P. Argemone*), Small Toadflax (*Linaria minor*), White Mustard (*Sinapis alba*), Spreading Hedge Parsley (*Caucalis arvensis*), a rare Goosefoot (*Chenopodium hybridum*), Lesser Snapdragon (*Antirrhinum Orontium*) in "tolerable plenty" and four scarce grasses (*Panicum viride*, *P. verticillatum*, *P. sanguinale* and *P. Crus-Galli*) as weeds in the cornfields and gardens. Three other grasses (*Bromus madritensis*, *Festuca pratensis* and *F. elatior*) complete the Battersea list.

"Battersea meadows, their adjoining fields, with the banks of the Thames, affording a profusion of plants in a small compass" was often the scene of "Herbarizing Excursions" which Curtis conducted for a fee, and the Red House was the rendezvous. Some half century later the ditches and creeks were to be filled in with a million cubic yards of soil from the docks, and on their site Battersea Park was opened to the public in 1858.

The scientific names used by Curtis are binomials—that is to say the names of the species are formed by adding a second name to those of the genera. This system, which is the one still in use, is based on the first edition of the *Species Plantarum* issued by Linnaeus in 1753—when Curtis was seven years of age. Prior to that very much longer names were used which had been gradually built up from shortening descriptions. Of these old cumbrous names those in common use were taken from the works of John Ray and it is interesting to reflect that Curtis knew Philip Miller, the veteran gardener at Chelsea Physic Garden, who had met Ray in his youth. Miller, Hudson, Thomas Martyn, and Hope, all friends of Curtis, were the botanists mainly responsible for the introduction of the Linnean system into Britain.



We are indebted to Curtis for descriptions and illustrations of a number of new species which is yet another indication of the original nature of his work. Some of the names he gave such as *Cerastium tetrandrum*, *Cerastium pumilum*, *Carduus tenuiflorus* and *Carex depauperata* are those we use to-day, some such as *Ranunculus hirsutus* have been found to be redundant as earlier names had been given by Continental authors, while others such as *Poa procumbens* have become obsolete by the transfer of the species to other genera.

The kindness and help which men of science exhibit towards one another was very much the same in Curtis's day as it is now, and it is only to be expected that he had a wide circle of friends and correspondents. The terms of his appointment as Praefectus Horti to the Society of Apothecaries "earnestly recommended to him to cultivate an extensive botanical correspondence, both at home and abroad," and it is evident that he carried out the recommendation conscientiously. He was naturally well known to all the leading botanists of the day and it is not easy to select those who were his more intimate friends. But mention must be made of the jovial Rev. Dr Samuel Goodenough, famous for his work on *Carices* (sedges), and later Bishop of Carlisle. Goodenough was one of the prime movers in the formation of the Linnean Society in 1788 and became its first Treasurer. He persuaded his friend Curtis to join in the foundation of the new Society and it is interesting to note that the signature of William Curtis was the third to be entered in the Roll Book, being preceded only by those of J. E. Smith (later Sir J. E. Smith) the first President, and of Goodenough. Curtis was also a member of the Society for Promoting Natural History, which had an earlier foundation but a much shorter history.

If he had many friends there is no evidence to show that Curtis made many enemies. It has been said that he was on bad terms with Hudson for a time, but the only evidence for this would appear to be the omission of citations of *Flora Londinensis* from the second edition of *Flora Anglica*. It is more likely that this omission was due rather to the impossibility of citing unnumbered plates with accuracy, a difficulty which was hardly overcome by Relhan, Withering and Lightfoot, who did attempt to include references to *Flora Londinensis* in their works. Curtis's only certain quarrel was with Smith and here the cause of difference was very understandable. Smith was wealthy, and when he commenced the publication of *English Botany* in parts with coloured plates it is only natural that the struggling Curtis should feel that his own part-works must suffer from the new competition. When such a well-founded difference had arisen it is greatly to the credit of the poorer man that he ultimately forgave Smith and became on good terms with him once more.

Of Curtis's appearance we may form some idea from the description given by Dr Thornton which was approved by Samuel Curtis: "His person was rather short, and thick-built; his dress was always uncommonly neat; his face was full and ruddy, and bespoke beneficence; health at one period glowed in his cheek . . ." Thornton also observes of his

last years that " . . . when collecting the wild plants and grasses of different districts, he saw his heart kindle at the sight of our native riches, and his whole countenance became illuminated. When discoursing upon these he glowed with youthful fire, and the once burning passion rekindled, like the lost spirits of Priam . . . " and " truth was his delight, and he imagined all must willingly bow before her shrine " and " He was a sincere believer in Christianity, although it be doubted whether he died a Quaker. He was a true and faithful husband; an affectionate and tender father . . . ; a kind and generous friend . . . "

We may learn a good deal of the kindliness and good-will of William Curtis from his works. Just listen to his words when giving directions for finding the very rare grass *Bromus madritensis*:—" On the wall of a garden near Battersea Church, situated at a small distance from the high-road which leads from the bridge to Battersea, out of which you turn in to proceed to the church:--a few yards down this turning, on the garden-wall to the right, it will readily be found . . . " One can hear the old botanist pausing at intervals and asking himself, " Have I told them enough? Will they find it from the instructions?" and then he goes on to add a further phrase to make sure that the visit will not be in vain.

But perhaps the most delightful eulogy was given by Manning and Bray, who wrote, " He died regretted by all lovers of this delightful science, and indeed by all who knew him, for he was a most pleasant companion, in whom good humour was always conspicuous " (*Hist. & Antiq. of the county of Surrey*, III, 467, 1814).

What have we left as memorials of this fine old botanist? We have his own works which give pleasure and instruction to all who have access to them. We have several accounts of his life, including the new illustrated book by Mr W. Hugh Curtis. We have a modern tablet on No. 51 Gracechurch Street to mark the place where he lived and worked for a time. We have the commemoration of his name in a genus of South African trees belonging to the *Cornaceae*, which was named for him by W. T. Aiton (*Hort. Kew.*, ed. 2, I, 270, 1810) and finally we have his gravestone in Battersea churchyard on which the lettering has become illegible through age and which is now to be suitably marked for the guidance of future generations. The four lines of rhyme at the end of the inscription had already become unreadable by February 1868 (Trimmen and Dyer, *Fl. Middlesex*, 396, 1869) and their loss will not be regretted, but the " modest epitaph " in prose was a dignified memorial and it is to be hoped that at some time in the future it will be possible to reinstate the original wording as inscribed on the death of the worthy William Curtis.



## Botanical Records for 1945.

Compiled by J. EDWARD LOUSLEY.

THE year 1945 has seen a most gratifying increase in the interest shown by members in the recording of plants, and this is apparent not only in the larger number of records sent in by a wider circle of contributors, but also in the higher standard of some of their lists. It is not easy to make a selection of records most likely to interest readers, and if alien species comprise an unduly large proportion of such a selection, it must not be supposed that the numerous discoveries of new stations for less exciting native species are of smaller value in our work.

We owe one of the best finds of the year to Mrs H. R. Davies, who discovered *Juncus pallidus* R. Br. naturalised in a gravel pit at East Bedfont (3). This rush is common in many parts of Australia and its discovery in Middlesex follows very close upon the first record for Britain from Bedfordshire, where it occurs in company of other allied Australian species.

Another alien plant which has probably come to stay is *Artemisia Verlotorum* Lamotte which has recently been detected by the towpath between Kew and Chiswick Bridges and in an adjoining lane. A remarkable feature of this plant is the late flowering in November, when the fresh bright green leaves render it easily distinguished from the native *A. vulgaris* L. Other features are the tall (c. 1½ metres) stems, simple and devoid of leaves below, the tansy-like smell of the leaves when crushed, and the small axillary capitula with reddish corollas devoid of glands. N. Y. Sandwith has seen it elsewhere in the same division (14) at Ham, and also at Ripley just outside our area, and I understand that Mrs B. Welch has found it at Brentford and Chiswick (both 6). The plant is a native of Western China and has long been naturalised in France, Italy and elsewhere.

Mrs B. Welch has made three other excellent records from division 14—*Carex vesicaria* L. in Fishpond Wood below Wimbledon Common, *Calamagrostis epigeios* (L.) Roth from Ham Gravel Pits, and *Potentilla argentea* L. from the towpath near Ham. The last species was seen in abundance in a near-by pit by the writer in 1931 and by P. H. Cooke the following year, but was destroyed by gravel digging operations, so the present record is a very welcome rediscovery. By the drained Pen Ponds in Richmond Park (14) Mrs B. Welch found *Eleocharis acicularis* (L.) Br.

The Rev. P. H. Cooke has sent in long lists of records which include *Astragalus glycyphyllos* L. and *Lathyrus sylvestris* L. from near Swanscombe (22). The localities are probably those from which Thomas Johnson collected these plants on July 13, 1629, as recorded in his *Iter Plantarum Investigationis . . . in agrum Cantianum* published in 1632



—the first printed account of a botanical excursion in England. The localities are given with greater precision in the same writer's edition of Gerard's *Herball* published the following year.

D. H. Kent has continued his careful investigation of the Middlesex flora and during the year saw no less than five of the species given as extinct or seriously diminished in the county in Sir Edward Salisbury's list reprinted in R. S. R. Fitter's *London's Natural History*. He showed me the rare *Lepidium ruderales* growing near the canal at Harefield (4) in both Middlesex and Hertfordshire. It is a "New County Record" to the first named vice-county. Outside the mill of Soya Foods Ltd. at Springwell Lock, Harefield (4), he made a careful study of the adventives whose seeds were brought in with the beans from America. These included *Ambrosia artemisiifolia* L., *A. trifida* L. and *Ipomoea hederacea* Jacq.

During the year the Society received news that F. C. Bromley had seen *Fritillaria Meleagris* L. growing near Totteridge (4) in 1944. The continued existence of the plant in this old locality was quite unsuspected and an important discovery. Our Chairman, L. G. Payne, has detected *Galinsoga quadriradiata* Ruiz & Pav. in St Pancras Lane in the City (8) and has also seen it at Kew (2) and Brentford (?6). Although outside our area, mention must also be made of his find of *Euphorbia platyphyllos* L. in a cornfield near Holmwood, which subsequently led to my finding *Vicia villosa* Roth. ssp. *dasycarpa* (Tenore) Cavillier, and other nice plants in a nearby rick-yard.

The publication of R. S. R. Fitter's *London's Natural History* should help to stimulate fresh interest in the botany of the metropolis and to remind members of some of the gaps in published accounts of the vegetation. As Fitter points out, for example, there is plenty of room for a lengthy paper dealing with the interesting and specialised flora of the railway banks of which there are only scattered records. One plant which has taken full advantage of such places is *Colutea arborescens* L., which is especially well naturalised along the railway from Fenchurch Street to Grays (8 and 12), and Fitter records it in a similar place at Upper Holloway (6) in a long and very useful list of records which he has contributed. Many of his records from Ken Wood and Hampstead Heath (6) are of special interest; most members will be surprised to hear that such plants as *Eleocharis palustris* and *Scirpus sylvaticus* are still to be found so near to the centre of London.

My own observations include a continuation of the survey of the bombed sites of the City (8), where such unexpected cornfield weeds as *Scandix Pecten-Veneris* L. and *Lithospermum arvense* L. have appeared, and the abundance of Bracken sporelings has provided one of the most remarkable botanical phenomena of recent years. A piece of waste ground near Shadwell Basin (8) produced *Epilobium lanceolatum* Seb. & Maur., *Rumex trigranulivalvis* (Danser) Rech. fil. (a segregate of *R. salicifolius* aggr.) and *Poa palustris* L. During an evening excursion with L. G. Payne, *Gnaphalium sylvaticum* L. was seen on a shelter in Hyde Park (6) and the yellow-flowered alien *Sisymbrium strictissi-*

*mum* L. in Belgrave Square (6). In company with J. A. Whellan a fine colony of *Rapistrum orientale* Crantz extending for over a quarter of a mile along the sea-wall at Stone Marshes (21) was found in May when the lighter yellow of the flowers made it easily distinguished from the superficially rather similar *Brassica nigra* L. Nearby *Trifolium maritimum* Huds. was seen, while a few miles away F. Rose showed me the rare *Trifolium suffocatum* L. growing with *T. glomeratum* L., and *Trigonella ornithopodioides* DC. on a sandy roadside near Darent (22).

The remarkable colonies of *Rumex Patientia* L. in our area have already been brought to the notice of members (*Lond. Nat.*, No. 24, p. 7, 1945), and the discovery of a new station in the Isle of Dogs (8) by J. A. Whellan is yet another link in its spread along the Thames. The same observer contributed other useful records and showed that *Bunias orientalis* L. is widespread in the Barking district (12).

The work of 1945 has confirmed once again that many new stations for native plants still remain to be found even in the well-botanised London area, and that constant observation is required to record the establishment of new aliens some of which may well prove to be a permanent element in our flora.

## Reading Circles.

THE following Reading Circles are run by various Sections, and members wishing to join or obtain further particulars should communicate with the Reading Circles Secretaries, whose addresses are given below. The annual subscription is indicated in brackets.

- British Birds* (2/6). W. A. Wright, 31 Beresford Road, E.4.  
*Entomologist* ... } H. J. Burkill, 3 Newman's  
*Entomologist's Monthly Magazine* (4/) } Court, Cornhill, E.C.3.  
*Entomologist's Record* ... }  
*Journal of Animal Ecology* (2/-) ... } C. P. Castell, 52 Graham Road,  
*Journal of Ecology* (2/-) ... } S.W.19.  
*Journal of the Commons, Open Spaces and Footpaths Preservation Society* (free). Miss L. J. Johns, 87 Morley Hill, Enfield, Middx.  
*North-Western Naturalist* (2/-). H. J. Burkill.  
*Report of the Botanical Society and Botanical Exchange Club* (1/-).  
G. R. A. Short, 36 Parkside Drive, Edgware, Middx.



## An Appreciation of L. B. Prout and his Work\*

By E. A. COCKAYNE, M.A., D.M., F.R.C.P., F.R.E.S.

LOUIS Beethoven Prout was born in a house at Crane Grove, Finsbury Park, on September 14, 1865. When he was about eight years old, the family removed to Dalston, in the parish of Hackney, in which parish he spent the rest of his life until about two months after the outbreak of war in 1939, when he removed to Pinner. He was educated at a private school kept by Mr Lewis, and it was a source of deep regret to him in later life that he was not prepared for Matriculation and so was unable to take a degree and subsequently a Doctorate of Science. After leaving school he went to the Royal Academy of Music, it being the wish of his father, Ebenezer Prout the great musician, that he should make music his profession. Here he gained a silver medal and became an Associate. He became a teacher of harmony and the pianoforte; the former subject he continued to teach until the end of his life, one pupil being still in touch with him for correspondence lessons at the time of his death, but more and more his real interest centred in his entomological work.

Even as a boy he was not merely interested in catching butterflies like so many schoolboys, but started a scientifically arranged collection with the aid of books, and liked to study the habits of various species of Lepidoptera and even those of other Orders. At one time he inspired the junior members of the family with a desire to keep ants in large bottles full of earth and watch their labours through the glass, but unfortunately they did not live long, possibly owing to lack of air.

His first contact with other entomologists was made when he joined the North London Natural History Society, to which he was introduced by the late R. W. Robbins, a friend of the family. In his earlier years he was a keen field naturalist and wrote several short articles on his visits to Sandown, I.O.W., where he caught *Leucania albipuncta* on many occasions, *L. vitellina*, *Laphygma exigua*, *Caradrina ambigua*, as well as the dark form of *Aporophyla australis* and other local species. He also contributed notes on the habits of various species of Noctuidae, Geometridae, and Psychidae. The first paper, which showed his increasing interest in synonymy, was on "*Coremia ferrugata* and *C. unidentaria*," published in the *Entomologist's Record* in 1892, and this was followed by one on the life-history of *Melanippe rivata* and *M. sociata*, in which he pointed out the larval and imaginal differences. In 1893 he wrote an article on collecting at Sandown, in which he recorded the capture of *Caradrina superstes* Tr. This led to a study of the genus and a paper entitled "The British Representatives of the Genus *Caradrina*." In this he noted the difference in the structure of the antennae of *C. superstes* and *C. ambigua*, and said that by this he had proved

\*Paper read to the Society on March 17, 1945.

that his supposed *superstes* was *ambigua*, but that two of Tutt's specimens captured in July by A. J. Hodges at Deal were true *superstes*, though the other three were *ambigua*. He also showed that Tutt's Sligo specimens were *C. taraxaci* = *blanda*, and that his var. *suffusa* must sink, a fact I confirmed years later by examining the genitalia.

As time passed he became more and more attached to the Geometridae, particularly to the Larentiinae, while his sister, Miss A. E. Prout, specialized in the Noctuidae. He published two interesting papers on "Some named varieties in the Larentiinae" in 1895 and 1897, "*Hydriomena furcata* (*Hypsipetes sordidata*): Its Synonymy, Variation, Geographical Distribution, and Life-history" in 1897, "The genus *Oporabia*" in 1897, "Some notes on *Oporabia autumnata* Borkh." in 1898, "Variation in *Oporabia dilutata*" in 1899, and "*Oporabia autumnata* from Rannoch with reference to several other related forms" in 1899. Until he wrote these papers the members of this difficult genus had been hopelessly confused, and not only by amateurs, for South in his excellent book was equally at sea. He named one form *christyi*, but the data available to him were insufficient to describe it as a separate species, and the credit for establishing its true status must go to J. E. R. Allen of Enniskillen. The long and sometimes heated controversy about the status of *Tephrosia* (*Ectropis*) *bistortata* and *crepuscularia* was still raging and he contributed "The Tephrosia Tangle" in 1896 and "Further notes on *Tephrosia bistortata* and *T. crepuscularia*" in 1900. He took the view that they are two distinct species and this is now generally accepted.

About this period he took an active part in the work of the North London Society, of which he was Curator from 1892 to 1894, a member of the Council in 1900, 1901, 1912, and 1913, Vice-President from 1896 to 1898, and in 1903 and 1911, General Research Secretary from 1904 to 1908, Lepidoptera Research Secretary from 1904 to 1909, Secretary with Arthur Bacot in 1899, and President in 1895, 1902, 1909, and 1910. He led Field Meetings at Chesham in 1894 and 1899, at Cuxton in 1899, Kew Gardens in 1899, Westerham in 1900, Oxshott in 1901, and Loughton in 1902. He read his first paper in 1892 on the Carpet Moths, which was followed by a long series from 1893 to 1908 on a variety of subjects including "Hibernation," "Thoughts on the relation of Lepidoptera and their food-plants," "The rare Hawk moths," "Flora of the Sandown district," "Transplantation; is it justifiable?" "The Amphidasyidae," "H. W. Bates; life and work," "Entomology better than Botany to help Biology study," "Local variation in the Lepidoptera," "Some features of our Lepidopterous Fauna," "Life and work of Linnaeus," "Some recent researches in Mendelian Theory" (with A. Bacot), "Notes on a recent visit to Canada," and "Some points of interest in the Geometridae."

During these years he was also a regular attendant at the meetings of the City of London Entomological and Natural History Society, and read a series of scholarly papers on the British Geometridae. In these he showed the rare gift of treating synonymy carefully and completely



and yet making them interesting to his hearers. These papers, which appeared in the *Transactions*, were: "The life history of *Oporabia (Epirrita) autumnata*," 1900, "The genus *Cidaria*," 1901, "Variation in *Sciadion (Gnophos) obscurata*," 1904, "*Venusia cambrica* and its allies," 1904, "Notes on *Cidaria*," 1905, "The British species of *Perizoma (Emmelesia)*," 1906, "The *Rheumaptera hastata* group," 1907, "Variation in *Entephria caesiata*," 1908, and "*Cidaria truncata* and *citrata (immanata)*," 1909. In these and in other papers he showed an increasing interest in and mastery of the bibliography, and in his obituary notice of J. W. Tutt he acknowledges his debt to this great entomologist in the following terms: "I can safely say that it was his philosophical view of things which first made me take entomology at all seriously. He it was, too, who first sent me to the literature, and infused into me something of his own love of thoroughness in bibliographical research." While accepting the truth of this we must recognize that the pupil acquired a more profound knowledge of entomological literature and surpassed his master in this field.

He was President of the City of London Society from 1899 to 1904. In 1914 when the two societies amalgamated and became the London Natural History Society he was its first President, and after having acted as a Vice-President from 1915 to 1927 he was elected an Honorary Vice-President in 1928, a position which he held until his death in December 1943. After the amalgamation, however, pressure of work prevented him from taking an active part in its affairs, but he read a paper on "Some points of interest in the Geometridae" in 1916, and another on "Entomology of yesterday and to-day" in 1934.

In spite of the demands upon his time, which this and other work entailed, he still found time to contribute a number of short notes and articles to the *Entomologist's Record* and the *Entomologist*. Many of them dealt with obscure points in synonymy, such as "The synonymy of some of the Emerald moths," 1900, "Sesiidae or Aegeridae," 1901, "Corrections in generic nomenclature," 1901, and "The generic separation of '*Gnophos*' *obscurata* from *glaucinaria*," 1904. He wrote a long review of Staudinger and Rebel's Catalogue in 1901, and shorter ones of Sherborn's *Index Animalium* and the *Index Zoologicus* in 1903. These are highly technical and interesting only to the specialist, but two papers belonging to the same period are of more general interest. I refer to "The lepidopterological books of the nineteenth century" published in the *Entomologist's Record* in 1901 and "Some recurrent phases of variation in the Larentiinae" which appeared in the *Entomologist* in 1904 and deals in a fascinating way with parallel variation.

I will now turn to another aspect of his work. He had always been interested in breeding Lepidoptera, and kept careful notes on the forms he bred. For instance, he obtained eggs from four females of *Eupithecia subfulvata*, taken at Forres, two of which were typical and two ab. *cognata*, and keeping the broods separate he published the results in 1902. He also wrote about "Two variable broods of *Triphaena comes* Hb. (*melanozonias* Gmel.) from Forres" and "On a second generation



of our Forres *Triphaena comes* Hb.," the former appearing in 1902 and the latter in 1904. In these he proved conclusively that the red form is dominant to all the pale grey and brownish forms and that the various melanic forms, *curtisii*, *nigrescens*, *rufonigrescens*, and *nigra*, are determined by one main gene for melanism dominant to all the others. His interest in genetics was aroused or at least stimulated by his association with Bacot. He bred many broods of *Xanthorhoë ferrugata* Clerck, publishing his results in 1897, and in a second paper, "*Xanthorhoë ferrugata* Cl. and the Mendelian hypothesis," in the *Transactions of the Entomological Society* in 1906, he drew his conclusions. "I cannot refrain," he said, "from remarking, in the first place, that, if only certain species are 'Mendelian' in their behaviour—as seems to be hinted at by some writers, e.g., Doncaster in *Ent. Record*, 1906, 18, 249—it would to me be a grave argument against our attributing the Mendelian phenomena, when observed, to any deep-seated biological cause; it is inconceivable that among organisms so homogeneous as the various species of Lepidoptera there could be cytological differences vast enough to allow of a gametic purity in certain cases only. Probably, however, it may be a sufficient reply that all species are really alike Mendelian in vital organization, but that it by no means follows that a particular manifestation of dimorphism, which appeals to the human eye, e.g., coloration, as in our *Xanthorhoë*, is necessarily correlated to the true gametic differentiation." Recapitulating his results with the black and red or purple banded forms he summarises thus, "Taking all these facts into consideration, it thus appears demonstrable that the colour dimorphism of *Xanthorhoë ferrugata* does not obey Mendelian law." In this species the black banded form is the common one and in most places the red or purple banded form is much the rarer. Prout attempted to work out his results on the assumption that the black banded form is dominant to the purple, and found that so many of his broods gave unexpected results that he was unable to reconcile them with Mendelian law. Actually black is recessive to purple and the few intermediates are genetically blacks. Had he worked out his results on this, the alternative assumption, he would have seen that they agreed quite well with Mendelian expectation. Doncaster pointed this out, and in a later paper he accepted it, but it is remarkable he failed to make the discovery himself. In passing, I may say that the apparent exceptions which Doncaster himself mentions are for the most part multifactorial, but one is a straightforward case of two homozygotes and an intermediate heterozygote, i.e., *Aplecta nebulosa*, ab. *thompsoni*, and ab. *robsoni*.

Then in collaboration with Bacot he did some experimental breeding on a larger scale, using various crosses of the white or cream-coloured Hyères form of *Acidalia virgularia*, which has no grey dusting, and the London form with a profuse dusting of dark grey atoms. They published their results and conclusions in the *Proceedings B.* of the Royal Society in 1909, saying that there is no Mendelian dominance in coloration in a cross of the dark London race with the light Hyères race

and no decisive reversion to type such as the Mendelian hypothesis demands. They thought it easier to reconcile their results with the Galtonian view that an individual receives half its characters from its parents, a quarter from its grandparents and so on than with the Mendelian view.

It must be remembered that at the time these experiments were carried out, Weldon, Karl Pearson, and others were strong opponents of the Mendelian hypothesis and many others thought that, while the Mendelian hypothesis explained some cases, other hereditary conditions did not conform with it. Prout's clear mind saw that segregation must be universal, whenever there was normal sexual reproduction, and that the lack of conformity must be apparent and not real, but no explanation had yet been offered for cases such as the racial crosses he and Bacot had been dealing with. Nevertheless, their conclusions were erroneous. I sympathize with their difficulties, because I made the same mistake in interpreting the results of crossing the English race of *Diaphora mendica*, with its dark brown male, and the Irish race, *rustica*, with its white male. In this racial cross the first generation is always intermediate in colour, but with suitable crosses segregation in later generations becomes manifest. In a small brood in which it appeared I overlooked its significance, but Onslow showed that there is a main dominant gene for whiteness and at least one modifying gene. Prout and Bacot always obtained intermediates in their first crosses, but there was clear indication of segregation in later ones, for example in F<sub>5</sub> they got 12 pure light moths, 32 nearly so, 95 intermediate, and 10 dark. No doubt Prout and Bacot's results with the two races of *Acidalia virgularia* show that more than one gene is concerned and afford a more or less close parallel.

Meanwhile Dr T. A. Chapman had handed over to him all the Geometridae, which he took in Spain, and Prout's determinations of the species and his comments on them were published in the *Entomologist's Record* in 1902, 1904, and 1907. These papers were the forerunners of many others of the same kind. Recognition of his great knowledge of this family had spread all over the world, and collections of Geometridae were continually being submitted to him. His reports, with descriptions of new species and subspecies, appeared in various periodicals published in the Dominions and Colonies, South Africa, Australia, India, Malaya, and Borneo, and in the journals of many European countries, such as Germany, Sweden, Switzerland, France, and Belgium.

Gradually the whole of his time became occupied with systematic work and he spent his time between the British Museum in London, the Zoological Museum at Tring, and the Hill Museum at Witley. His work at Tring started about 1913, and he wrote a long series of 35 articles describing new species of Geometridae and Dioptidae for Lord Rothschild in *Novitates Zoologicae*. His connection with Mr J. J. Joicey began about 1917, and many papers describing the new species in the Hill Museum appeared in the *Annals and Magazine for Natural History*; after the *Bulletin* of the Hill Museum was started further papers



appeared in that journal. After Joicey's death he divided his time between Tring and London, and when Lord Rothschild died continued to work at both Museums.

During these years he contributed to three monumental works. For P. Wytsman's *Genera Insectorum* he wrote three parts, fasc. 103 on the sub-family Brephinae, fasc. 104 on the Oenochrominae, and fasc. 129 on the Hemitheinae. He wrote the only parts on the Geometridae published before his death, those on the Brephinae and the Oenochrominae, 1912, and that on the Hemitheinae, 1913, for Wagner's *Catalogus Lepidopterorum*. He also wrote all the parts on the Geometridae for Seitz's *Macrolepidoptera of the World* in both the German and English editions and at the time of his death was engaged on the Supplement to the Palaearctic Geometridae, only a part of which had been published before the outbreak of war.

Prout's views on nomenclature were uncompromising and he insisted on the absolute inviolability of a name as first published. Even when a name was obviously misspelt, whether it was due to the author's ignorance or to a printer's error, he said it must remain unaltered. For instance, he used the original spelling of *Perizoma bifasciata* and *Xanthorhoë quadrifasciata*, although the s of fascia was omitted in the first and the c in the second. To make a specific name agree in gender with the generic name, and change it if it was placed in a genus of different gender, was in his opinion indefensible; for example, when *piniaria* was removed from *Fidonia* to *Bupalus* it remained *piniaria* and did not become *piniarius*. He said it was illogical to allow names, which are obviously mere combinations of letters with no meaning, such as *Datana* of Walker, and yet to reject or alter others because their spelling does not indicate their meaning with sufficient accuracy. His definite opinions and consistent action did much to stabilize the nomenclature of the Geometridae.

When Oberthür tried to persuade the second Entomological Congress to pass a rule that no name was valid without a figure, he was opposed by Prout, who said he advocated figures, but that the way to elucidate a new species by illustrations was to illustrate just the character or characters, which would best differentiate it from its already known allies. He instanced the various species of *Leptomeris*, which are differentiated by the male hind tibial structure and said of them "If any illustration is to be demanded—which is really superfluous—let me implore in the name of common sense and practical utility that it should be a figure of the male hind tibia and not a drawing of the wing area." He also feared that dependence on figures would lessen, not increase, the care bestowed in other and more important directions (referring to venation, antennal, leg structure, and so on). He said that though Hübner was thought by some to have been a hundred years before his time, Curtis was much more deserving of this encomium, because he gave accurate drawings of the minute structure of the insects he depicted. He cited *amniculata* Hübner, an aberration of *unangulata*, which had baffled many entomologists, and said that a remark that the



areole is double instead of single would have differentiated it from *alternata* Müll. (*sociata* Borkh.).

You must not think he did not appreciate the beauty of good illustrations of the wing area, for he was a great admirer of illustrations, such as those in the works of Sepp, Hübner, and Millière, or, to take a more modern artist, of the exquisite paintings of Culot, but he admired them as works of art rather than valuable aids to the taxonomist.

His pre-eminence as a systematist was due in part to his unrivalled knowledge of bibliography, his marvellous memory, and his almost incredible industry. He did not trust to memory, but kept copious notes, and the accuracy on which he prided himself was due to his habit of copying in full the diagnosis of new genera and species and of verifying all his references before publication. His field work stood him in good stead, for it gave him an insight into the biology of the moths, of which he was so fond, and a realization of the importance of studying ecology. He may have found it of little value in the greater part of his taxonomic work, but he was convinced that, as our knowledge of the early stages of the geometers, their food-plants, and the ecological conditions in which they live, increases, these will become of greater and greater value to the systematist. In his opinion the more characters taken into consideration the more accurate will be the classification of the Lepidoptera, and realized into what gross errors dependence on a single character, such as venation or the structure of the genital armature, has led some of the systematists of the past. I think it was this breadth of outlook, as much as any of his other qualities, which contributed to his greatness. Like all great men, Prout was always learning. To the end of his life he remained young in mind and was quick to take advantage of any new discovery. When I pointed out to him that *Eupithecia cerussaria* Led. is the only member of the genus that possesses fluorescent pigment in its scales, he said he was already aware that it differed from the rest in its long narrow areole, and that with the knowledge of this additional difference it would probably require the erection of a new genus for its reception. He also thought that the distribution of fluorescent pigments in *Abraxas* would necessitate some revision of the various sections of the genus, though in the main it supported the present arrangement. He was much interested in the recent work of E. B. Ford on the pigments of Lepidoptera, and agreed with him that a knowledge of the chemistry of pigments would ultimately be of the greatest value to systematists, affording evidence of relationships quite independent of the structural characters.

Retaining his interest in genetics, he held clear views about the naming of aberrations, holding that well-defined and recurrent aberrations, particularly those that suggested Mendelian segregation, should bear names. He added the proviso that it should not be carried to such over-minute detail that it was impossible for the owner of an aberration to recognise it without possessing the whole series of forms for comparison. He strongly disapproved of anyone undertaking the naming of aberrations, if he had not taken the trouble to overhaul the litera-

ture already dealing with the subject. He also expressed his disagreement with those American authors who hold that the same name should not be used for parallel aberrations occurring in species of the same genus, and said that on the contrary such forms should receive the same names whenever possible. The opposite view was, he said, most unscientific. In this he is correct, for parallel forms, especially in congeneric species, may be determined by the same gene. In this connection an anecdote occurs to me, which illustrates Prout's intellectual honesty. Speaking one day of the melanic *Ennomos quercinaria*, Mr C. N. Hawkins pointed out that there were two dark brown aberrations, one unicolorous and the other with the median area bounded by pale yellow lines. I said that presumably Prout's ab. *perfuscata* was the unicolorous form, but Prout said no, for he always took Barrett's figures as types, and Barrett figured the form with transverse yellow lines. Moreover, when he named the form he was unaware of the existence of the unicolorous one. We said that, since his description applied to this, the easiest course would be to give a new name to the form with lines, but he demurred and said he could not reconcile this with his conscience. He would prefer to say that his original description was inadequate, amplify it, and give a name to the unicolorous form.

Inevitably much of this paper has been a catalogue of Prout's great and lasting contributions to entomological literature, but to give you a glimpse of the man himself I will quote from an abstract of his Presidential address to the North London Society delivered in 1895 on "Specialists and Specialism." "Every naturalist should have a general knowledge, accurate if not profound, of Nature as a whole. Every naturalist should have a specialty in some direction. Specialists should be known as such to their fellow naturalists. They should be the depositories of knowledge in their special departments by aid of their brethren, who should communicate to them any facts in those departments of which they might become cognisant. They should place their knowledge at the service of any true working naturalist who might require it. It was recognized that this was a high ideal, but he had great faith in the elevating power of a high ideal."

He certainly lived up to the ideals he laid down for others in this address. He gave help ungrudgingly to all who asked for it, beginners and advanced workers alike, and many an entomologist will remember with gratitude the way in which he would interrupt his own work to give his valuable advice or clear up some taxonomic puzzle. Recognition of his work, such as the Honorary Vice-Presidency of this Society or the Special Life Fellowship conferred on him by the Royal Entomological Society in 1943, pleased him, but he never sought for popularity or honours. Unassuming and modest, he was content to enjoy the happiness bestowed by work well done. By the death of Prout, famous son of a famous father, the world is the poorer, and international entomology has lost one of its foremost taxonomists and its greatest authority on the Geometridae.



## The Neuroptera of the Home Counties.

By E. B. PINNIGER, F.R.E.S.

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THE Neuroptera are a much neglected but ecologically important order of insects, and this paper is presented in the hope of stimulating interest in the group. A large number of species may be found in the Greater London Area, and twelve species occur within Central London, many of them common in parks and gardens.

The order is now restricted to include only those species formerly grouped as the sub-order Planipennia, that is those insects in which the larvae possess sucking mandibles only, the larvae of the closely allied Megaloptera and Mecoptera having biting mouth parts.

The British species of Neuroptera number fifty-three, and are divided into five families, as follows:—

The **Coniopterigidae**, a family of seven species, all small insects with a wing expanse of 5 to 8 mm., are remarkable in that the body and wings are covered with a white wax secretion giving them a superficial resemblance to the Hemipterous pest known as “white fly.” Much work remains to be done on this family, as the biology of three species is unknown.

The one representative of the **Osmylidae** is a fine insect and our largest Neuropteron. The **Sisyridae** are small dark insects without conspicuous markings; the early stages of all three species are aquatic. The **Hemerobiidae** (Brown Lacewings) are the largest group, with twenty-eight species mostly small grey or brown insects with beautiful delicately mottled forewings. The best known family, the **Chrysopidae** (Green Lacewings), is represented by fourteen species, many of the insects being of great beauty with metallic green or golden eyes, bright green bodies, and relatively large delicate wings. With the exception of the Sisyridae, the larvae of which are parasitic on freshwater sponges, the insects in all their active stages are predaceous, a major item in the diet of the group being aphides and coccids.

In considering the ecology of the group, the true habitat of a species is taken to be that in which the larva normally feeds. The adults, being mainly crepuscular and nocturnal insects, often shelter through the day in situations which have no ecological significance. Some species are very restricted in habitat, while others occur in many types of plant community. The species attached to gardens are of greatest economic importance, and a large proportion of these are found in the Chrysopidae.

Neuropterous insects are not very active on the wing and flight is usually weak. Most species are attracted by light and considerable numbers have been taken at light-traps.

The longest life-cycle does not exceed one year and in the multi-brooded species is considerably less. The number of broods is influenced by temperature and a species that is double-brooded in the South of England may be single-brooded in the North.

Imagines of some species survive for several months, but in most cases, however, winter is passed in the prepupal stage within the cocoon, although some species hibernate as larvae or winter as eggs.

*Chrysopa carnea* hibernates as an adult, oviposition taking place in the second season. During hibernation a most striking colour change takes place. The usual green hue of *Chrysopa* is replaced by a reddish brown, often extensive enough to colour the venation of the wings. In spring the insects resume their normal green hue. The exact nature of the colour change is not known, but it appears to be produced by a fall in temperature, and experiments have shown that even in winter normal colouration may be restored by subjecting the insects to a high temperature. Once the green colour has been restored, a further lowering of the temperature does not cause any reversion to red.

The larvae of all Neuroptera are carnivorous and feed upon soft-bodied forms of animal life, which are emptied of their contents by means of the sucking jaws. *Osmylus* is semi-aquatic, the larvae living on the soft mud by streams. The prey consists chiefly of Diptera larvae which are impaled by the long jaws. The saliva appears to be poisonous, as larvae of *Chironomus* have been observed to die within a few seconds of capture. Most of the terrestrial species prey on Aphides, Coccids, mites, small spiders, etc., and are among the few predaceous insects attacking the woolly Aphides *Eriosoma* and *Chermes*. The Lepidoptera do not escape attention and a recent record in the *E.M.M.* gives *Chrysopa carnea* as feeding on ova of *Pontia daplidice*, and in 1944 a brood of small larvae of *Lathoe populi* were decimated by a small larva of *C. perla*. Although many species are attached to certain types of vegetation, in captivity a species normally associated with conifers will thrive on prey from deciduous trees. Water and plant juices are occasionally taken and the nectaries of flowers are visited. The larva of *C. carnea* is frequently found on flowers of the Compositae but plant juices form only a very minor part of the diet.

Many figures have been published on the quantity of food required by the insect for completion of the metamorphosis and the indications are that Chrysopid larvae consume on the average 150-200 aphides.

The adult insects take food similar to that of the larvae, and as the jaws are now adapted for biting, the prey is not sucked but completely eaten. Water and sweet liquid are also taken and the insects will visit the lepidopterist's sugar patch. The content of the gut shows that although the bulk of prey are aphides, micro-lepidoptera and other insects are frequently taken. As many of the latter are much more active than the Neuroptera, it seems reasonable to assume that



only injured or freshly dead specimens are consumed. The amount of food eaten is considerable and Chrysopidae in captivity have consumed from 300-400 aphides. As with the larvae, flowers are sometimes visited but the insects are of little use in the process of pollination.

Published records of control factors are few. There are none of egg parasitism, although this is known from some foreign species. There are numerous hymenopterous parasites of the larvae, but little evidence of attacks in the pupal stage. As far as is known, there are no hymenopterous parasites of the imago, but a small midge has been found attached to the wings of certain species. The natural enemies of the Neuroptera are known to include insects, spiders, bats and birds, but there are very few records. Records of attacks by predaceous insects are more detailed. Ova of Neuroptera are eaten by Coccinellid larvae and ants, and are attacked in the larval stage by Coccinellid and Syrphid larvae.

#### IMAGINES ATTACKED.

Prey.	Predator.
<i>Hemerobius micans.</i> <i>H. hamulinus.</i>	<i>Cantharis pellucida</i> (Col.).
<i>Chrysopa perla.</i>	<i>Pyrrhosoma nymphula</i> (Odon.).
<i>H. stigma.</i>	<i>Lasius fuliginosus</i> (Hym.).
<i>Sisyra fuscata.</i> <i>M. stigma.</i> <i>H. pini.</i>	<i>Scatophaga stercoraria</i> (Dipt.).
<i>M. humulinus.</i>	<i>Empis tessellata</i> (Dipt.).
<i>C. ventralis.</i>	<i>Empis livida</i> (Dipt.).
<i>C. ventralis.</i>	<i>Neotamus cyanurus</i> (Dipt.).

The appended tables of distribution and ecological data have been compiled from both my own and published records; many notes on distribution are not precise enough to state definitely that all the species recorded, for example from Surrey, occur in that part of the county included in the L.N.H.S. area; for this reason I have preferred to include the whole of the counties indicated as most of the species will be found in the smaller area and possibly others not yet recorded. The data on biology is very general and it should not be assumed that because a species is noted as "habitat Scots Pine" it will not be found on other vegetation, but the information given should serve as a guide to the normal behaviour of most species. In this paper frequent reference has been made to the publications listed below, which should be consulted for further details and help to identification.

- W. J. Lucas. Annual Notes on Distribution in *The Entomologist* up to 1932.  
 C. L. Wittycombe. Notes on the Biology of some British Neuroptera, *Trans. Ent. Soc. Lond.*, 1922.  
 F. J. Killington. A synopsis of British Neuroptera, *Soc. Brit. Ent.*, 1929. (Contains useful keys down to species.)  
 F. J. Killington. A Monograph of the British Neuroptera, *Ray. Soc.*, 1936-1937.  
 E. E. Syme. Notes on *Chrysopa septempunctata*, *Proc. South Lond. Ent. and Nat. Hist. Soc.* for 1935-6, pp. 52-4, 1936.

TABLE OF NEUROPTERA RECORDED FROM THE HOME COUNTIES WITH DETAILS OF BIONOMICS.

Species.	Distribution.					Relative Abundance.	Period of Flight.	Ponds.	Streams.	Conifers.	Deciduous.	Undergrowth.	Hedgerows.	Herbaceous Pl.	Gardens.	Larval Prey.	Remarks.
	Essex.	Herts.	Kent.	London.	Middlesex.	Surrey.											
<i>Conwentzia psociformis</i> Curtis.	+	+		+	+	+	C.			+	+	+	+	+	+	Coccidae, Aphididae, Mites.	Holly and Ivy.
<i>Coniopteryx tineiformis</i> Curtis.	+		+		+	+	F.			+	+	+	+				Sallow.
<i>C. pygmaea</i> Enderlein.	+		+			+	C.			+							
<i>Semidalis aleyrodiformis</i> Steph.	+				+	+	C.				+	+	+	+	+	Aphididae.	Holly and Ivy.
<i>Parasemidalis annae</i> End.						+	R.			+							Scots Pine.
<i>Oomytus fulvicephalus</i> Scop.	+	+	+			+	O.		+							Larvae of Diptera, e.g. <i>Chironomus</i> spp.	Imago by Wood-land Streams.
<i>Sisyra fuscata</i> Fabr.	+	+			+	+	F.		+							Parasitic on Fresh-water Sponges.	
<i>Sisyra datii</i> McLach.						+	O.		+							Parasitic on Fresh-water Sponges.	
<i>S. terminalis</i> Curt.						+	O.		+							Parasitic on Fresh-water Sponges.	
<i>Micromus variegatus</i> Fabr.	+	+	+	+	+	+	F.				+	+	+	+	+	Parasitic on Fresh-water Sponges.	
<i>Eumicromus angulatus</i> Steph.			+				O.							+		Aphididae, Mites, etc.	
<i>E. paganus</i> L.	+		+			+	F.				+	+	+	+	+		



Species.	Distribution.					Relative Abundance.	Period of Flight.	Ponds.	Streams.	Conifers.	Deciduous.	Undergrowth.	Hedgerows.	Herbaceous Pl.	Gardens.	Larval Prey.	Remarks.
	Essex.	Herts.	Kent.	London.	Middlesex.	Surrey.											
<i>Hemerobius humulinus</i> L.							May-Oct.										Hazel and Oak.
<i>H. simulans</i> Walk.							May-Oct.			+							Larch.
<i>H. stigma</i> Steph.	+		+		+	+	Jan. to Dec.			+						<i>Lachnus pini</i> , <i>Eulachnus</i> , Aphididae, Psocoptera.	Scots Pine.
<i>H. atrifrons</i> McLach.	+					+	May-Aug.			+							Larch and Spruce.
<i>H. pini</i> Steph.	+	+				+	May-Aug.			+							Spruce.
<i>H. contumax</i> Tjeder.						+	June										Imago on Larch. Larva unknown.
<i>H. nitidulus</i> Fabr.						+	April-Oct.			+							Scots Pine.
<i>H. micans</i> Oliv.			+			+	April-Oct.				+		+				Beech and Hazel.
<i>H. lutescens</i> Fabr.	+	+	+		+	+	April-Oct.				+	+	+				Beech, Hazel, Oak.
<i>H. marginatus</i> Steph.		+					May-July.				+						Birch.
<i>Boratomya rava</i> Withy.			+			+	May-Aug.			+							Scots Pine.
<i>B. betulina</i> Strøm.	+		+			+	May-Sept.				+		+	+			Birch, also low plants.
<i>B. subnebulosa</i> Steph.	+	+	+	+	+	+	Feb.-Nov.						+	+	+		Garden Plants.

Species.	Distribution. Essex. Herts. Kent. London. Middlesex. Surrey.	Relative Abundance.	Period of Flight.	Ponds.  Streams. Conifers. Deciduous. Undergrowth. Hedgerows. Herbaceous Pl. Gardens.	Larval Prey.	Remarks.
<i>Wesmaelus concinnus</i> Steph.	+ + + + +	F. O. O. O. F. C.	May-Aug. May-Aug. June-Aug. June-Sept. June-Aug. May-Aug.	+		Scots Pine.
<i>W. quadrifasciatus</i> Reuter.		O.	Aug.	+		Larch.
<i>Symphorobius elegans</i> Steph.		O.	June-Aug.	+	Aphididae.	Beech, Oak.
<i>S. pygmaeus</i> Ramb.		O.	June-Sept.	+		Oak.
<i>S. fuscescens</i> Wall.		F.	June-Aug.	+	Aphididae.	Scots Pine.
<i>Chrysopa flava</i> Scop.		C.	May-Aug.	+	Aphididae, Jassidae, Psyllidae, Lep., Dipt., Col., Arachnida.	Lime, Oak, Hazel.
<i>C. vittata</i> Wesmael.		F.	May-Aug.	+		Lime, Oak, Hazel.
<i>C. ciliata</i> Wesmael.		C.	April-Oct.	+	Aphididae.	
<i>C. flavifrons</i> Brauer.		R.	June-Sept.	+		Conifers normally.
<i>C. albolineata</i> Kill.		O.	May-Sept.	+	Aphididae, Coccidae.	
<i>C. carnea</i> Steph.		C.	Jan-Dec.	+	Aphididae, Coccidae, Larvae of Lepidoptera, Gall mites.	
<i>C. septempunctata</i> Wesmael.		C.	May-Oct.	+	Aphides, Larvae of Micro Lep.	



Species.	Distribution.	Surrey.	Relative Abundance.	Period of Flight.	Ponds.	Streams.	Conifers.	Deciduous.	Undergrowth.	Hedgerows.	Herbaceous Pl.	Gardens.	Larval Prey.	Remarks.
<i>C. ventralis</i> Curt.	Essex.	+		June-Aug.			+		+				Aphididae.	Normal habitat sand dunes.
<i>C. abbreviata</i> Curt.	Kent.	+		June-July.										Rough vegetation, waste ground.
<i>C. phyllochroma</i> Wesm.	Herts.	+		June-July.			+						Aphididae.	
<i>C. perta</i> L.	Essex.	+		June-Aug.			+		+				Aphididae, Larvae of Hymenoptera and Lepidoptera.	
<i>C. dorsalis</i> Bann.		+		June-Aug.			+							
<i>Nathanica fulviceps</i> Steph.				June-July.				+						Oak.
<i>N. capitata</i> Fabr.				June-Aug.			+							

## Cynipid Flies and Galls on Oak\*

By J. Ross.

---

FOR many years some members of the Plant Galls Section have been more or less continuously engaged in the observation and study of galls caused by flies of the group Cynipidae on the two British species of Oak (*Quercus Robur* L. and *Q. sessiliflora* Salisbury), in the breeding of flies from these galls, and to a lesser extent in endeavouring to induce bred flies to oviposit in the tissues of young oak-trees and so cause the growth of galls.

The gall-causing Cynipidae are a very interesting group, because some of them are of two alternating generations, the flies of one generation being so distinct from those of the other that at one time the flies of the two generations were in some cases placed in different genera. Also, male flies are unknown in some species and are absent in one generation of other species; reproduction in the absence of male flies occurs by parthenogenesis.

So far as members of the Section are aware, little work has been done on this group of galls and flies in Britain in recent years except that undertaken by themselves, and no one in Great Britain is or has been for some time a recognised expert on the flies. Some years before the 1914 war with Germany, Mr Niblett through a friend sent some Cynipid flies to Dr Hedicke of Berlin for identification; it was four years before the flies were returned. By the time the flies were sent back to Mr Niblett, some of us had formed fairly definite opinions as to the species to which they belonged, but to have our views confirmed by Dr Hedicke gave us confidence in approaching other problems of identification as they arose.

Some of us are inclined to attribute the absence of British work on the gall-causing Cynipidae in recent years to the difficulty which the group presents in consequence of the variation between individuals of a species, and to the fact that flies of some species can only be identified with certainty by breeding them from the galls. Knowledge of the gall from which a fly has emerged is a great help, but when authorities give an inadequate picture of a gall or a misleading one, and when it is found that one authority has copied from another, and that such variation as occurs in the illustrations is in an erroneous direction, or when the original drawing is of an abnormal or infrequent form of the gall, one may be in a state of mystification as to both the gall and the insect for an annoyingly long period. Some original work has been published in little known journals or annuals of very restricted circulation, and it is a misfortune when inadequate reproductions from such publications receive a wide circulation.

\*A paper read to the Society on 18th October 1945.



The only British work on the gall-causing Cynipidae that I know is Cameron's " British Phytophagous Hymenoptera " (Vol. IV) published in 1893 (2); that is over fifty years ago. This is a useful work as far as it goes, but it is inadequate in its descriptions of the insects, the illustrations of the insects are of small value, and the text is sometimes obscure and now and again self-contradictory. Two Continental works of much value are " Les Cynipides " by Abbé J. J. Kieffer (1901) (6), and Dr von Dalla Torre's and Abbé Kieffer's " Cynipidae " (1910) (7). These works are to some extent compilations, and the illustrations are often copies; they suffer from the limitations of such works. E. T. Connold produced a work on " British Oak Galls " in 1908 (3), and E. W. Swanton's " British Plant-Galls " (1912) (4) contains brief descriptions of oak-galls, but these works are of little or no help in the identification of the flies. For galls only there is C. Houard's work, " Les Zoocécidies des Plantes d'Europe " (1908-9) (5). Adler's " Alternating Generations " (1) is of great biological interest; it relates Adler's work in breeding flies from galls and inducing flies to cause galls, in the course of which he discovered a series of galls and insects; usually the descriptions of the flies are brief.

As members of a natural history society the Section has been engaged in persistent field work for many years, and though efforts in this direction slackened in the war years they did not cease. Work has been done in breeding insects from galls, and by two members in endeavouring to induce flies to oviposit in cultivated young oak trees and so to cause galls. This work, although disappointing at times, has met with substantial success, not only in confirming the relationship of flies previously associated by work carried out by Adler in Schleswig, but also in establishing the relationship of alternating generations between two sets of flies, the association of which had not been proved previously.

When the Section was formed, some of its members came to the study of these oak-galls with no knowledge of them of a scientific character, but Mr H. J. Burkill had had considerable experience in the field and was familiar with many of the galls. Inevitably some of us made mistakes. I myself for some time thought I was finding the gall of *Andricus quercus corticis* L. form *gemmatus* Adler, when I was finding something quite different; this was a gall not mentioned by Swanton (4) and only referred to casually and not indexed by Cameron (2a). It is the gall of *Andricus ostrea* Hartig f. *furunculus* Beyerinck. The insect was first classed as a *Neuroterus*. I was indebted to Mr Burkill for leading me to the correct identification of the gall and the insect, which were described by Kieffer (6a). The gall is usually covered by bud-scales until the fly has emerged or is about to emerge, and probably some familiarity with it is necessary to detect it readily. As the name I have used implies, it is now known to be the sexual generation of *A. ostrea*, which was a matter of conjecture and dispute for a long period. For some time *ostrea* was considered by some authorities as a *Neuroterus*, and Adler (1a) suspected that (*Spathogaster*) *Neuro-*

*terus aprilinus* was the alternative. Adler records that he succeeded in getting flies of *ostrea* to prick oak buds, but that no galls were formed (1a). I suspect that Adler failed to detect the *furunculus* galls. As *ostrea* usually oviposits in October or earlier, and the resultant galls are more or less hidden until the *furunculus* flies emerge in April or May of the following year, it would not be surprising if they escaped his notice. Dr Bagnall and Professor Heslop Harrison recorded the occurrence of *furunculus* galls in Britain (10) in 1919, but I was unaware of this until some time after I had found the galls myself. The fly may have been known to Schenck in 1863, and it seems to me highly probable that these are the bud-galls recorded and illustrated by Miss Ormerod in *The Entomologist* in 1879 (8); Miss Ormerod's description and illustrations are reproduced in Cameron's work (2b). It is something that those of us who have been working on these oak-galls have through our own efforts and persistence become well acquainted with these *furunculus* galls which eluded the observation of early workers. Mr Burkill has definitely proved the association of *ostrea* and *furunculus* by getting flies sleeved on a young oak to oviposit and to cause the galls of the succeeding generation.

For some time very small galls that appear on oak male catkins puzzled us. We thought it possible that they might be small specimens of *Andricus quadrilineatus* Hartig. Flies were bred from these small galls, and their emergence in July and August proved that they had no connection with *A. quadrilineatus*. Eventually we came to the conclusion that the flies were *Neuroterus schlechtendali* Mayr. A stumbling block in the way of identification was the illustration of the gall given by the Continental authorities to whose works reference was made (5a, 6b, 7a), but a very different representation of the gall in Cameron's book (2c) put one on the right track. Unfortunately, this figure is not mentioned in the text, where the fly is introduced as the sexual form, whereas it is agamic. This was one of the flies sent by Mr Niblett to Dr Hedicke and identified by him. It would seem that Continental authorities have accepted *schlechtendali* as the agamous alternative of *Neuroterus aprilinus* Giraud. Kieffer (6c) was dubious about it, and I am unaware that the association of the two flies has been conclusively proved by breeding the two generations through the galls, that is by inducing *aprilinus* to oviposit and produce galls of *schlechtendali*, and inducing *schlechtendali* to cause galls of *aprilinus*. This subject was treated in a paper partly reproduced in the *London Naturalist* for 1938 (9).

*Andricus xanthopsis* Schlechtendal was described in 1883; it is not indexed as a British insect in the works of either Cameron or Swanton, but is included in the list of galls published by Dr Bagnall and Professor Harrison (10) in 1919. When members of the Section first bred the insect it was thought to be a variety of *Andricus amenti* Giraud which was recorded from Braemar and Kew according to Cameron, and its gall is figured by Connold. So far as my knowledge goes, the galls of *A. xanthopsis* occur only on *Quercus sessiliflora* in



Britain, although on the Continent they are said to be found on *Q. Robur*. It is on *Q. sessiliflora* that members of the Section have found them, and where this species of oak grows the galls seem to be not uncommon. The error in regarding the fly as a variety of *A. amenti* was corrected and the revised identification was confirmed by Dr Hedicke, to whom flies had been sent by Mr Niblett. By the time the error was corrected an important development had taken place. Mr Niblett and Mr Burkill, by placing flies on parts of young oaks that were sleeved, induced them to oviposit under cover, and galls of *Andricus glandulae* Hartig resulted. Galls of *A. glandulae* in Southern Britain are very rare on oaks other than *Q. sessiliflora*, but Mr Niblett and Mr Burkill got them from *A. xanthopsis* flies on young trees of *Q. Robur*. *A. glandulae* was described as *Cynips glandulae* in 1840, and the name of the *xanthopsis* fly on the system of nomenclature I use is *A. glandulae* Hartig f. *xanthopsis* Schlechtendal. I should explain that I use this form of name in preference to *A. glandulae* sexual generation, as some Continental authorities would do, because I think it is advisable (and to some of us it is certainly helpful) that the name with which we are familiar should be preserved, and its use sanctioned. I must admit that I myself find it difficult at times to state immediately which are the associated flies in alternate generations.

*Andricus occultus* Tschek was named and described in 1871. It seems to be a fly of local occurrence, or it may be that its occurrence is somewhat casual in many places. We are fortunate in knowing a locality in Kent where its galls have been found in some numbers year after year. It has also been found in Essex and Mid-Surrey, but not in any numbers in those areas, and usually the flies had emerged before the galls were seen. Neither Cameron nor Swanton mentions the insect, but the gall is included in Bagnall and Harrison's list (10).

As the name of the fly suggests, the gall is in many cases hidden, and even when a favourable locality is known the galls may prove difficult to find. It occurs on male catkins of *Q. Robur* and *Q. sessiliflora*, and it is in an area where the trees are of the latter species that we have found the galls in considerable numbers. The presence of the galls results in stunting the growth of the catkins in a greater or lesser degree, but sometimes the catkins are half the usual length; frequently the catkins are so stunted that they do not emerge from amidst the bud-scales, and unless one knows this and carefully scrutinises opening buds, the galls may be passed over. On catkins that develop to about half the usual length some keenness of eyesight is needed to spot them, and it often happens that the flies have gone from some galls found on such catkins; I rather suspect that growth of the catkins may happen sometimes after the fly has gone, but some catkins about an inch long are found to have inhabited galls. The date of flowering of oak-trees varies in most areas, and this is fortunate for anyone endeavouring to collect *occultus* galls so as to obtain flies; if the would-be collector finds galls with emergence holes it is possible that by giving attention to trees less advanced in flowering he may succeed in the search. The

season of 1945 was early, and the Section was unsuccessful in its search for inhabited galls of this species that year.

Having found these galls in the Kent locality, and having bred and identified the flies, efforts were made to link up the *occultus* flies with some other generation. In this Kent locality at a date later in the year than when the *occultus* galls are found on the male catkin, galls of *Andricus solitarius* Fonscolombe (named *Diplolepis solitaria* in 1832) usually will be found in some abundance, and this was suggestive. In 1944 Mr Niblett introduced flies bred from the Kent galls to a young tree of *Q. sessiliflora* (this being the species of oak in the Kent area), and was rewarded by obtaining one gall of *A. solitarius*, from which a *solitarius* fly emerged. I consider that this may be taken as positive proof that *A. occultus* is the sexual generation of the agamic *A. solitarius*. So far as I am aware no one had suggested an alternative generation for *occultus*, the galls of which Tschek and Mayr found on catkins of *Quercus pubescens*.

For the sexual generation of *A. solitarius*, Schlechtendal and Fr. Löw suggested *A. xanthopsis*, Cameron *A. amenti*, and Beyerinck *Neuroterus aprilinus* (6d, 7b, 2d). We may cordially congratulate Mr Niblett on having definitely decided the matter, especially as the actual alternate is a fly that the guessers had not suggested; in Cameron's case, I think, it should be pointed out that he was probably unaware that *A. occultus* was a fly found in Britain.

*A. occultus* flies emerge from the galls in April or May, and the flies presumably oviposit in May. The galls of *A. solitarius* are first noticeable as a mass of purplish red hairs and are found to have assumed their somewhat fusiform shape in July: the insect emerges in September. You may have wondered that I tried to stress the fact that Mr Niblett bred a *solitarius* fly from the one gall that appeared on his young *sessiliflora* oak after he had placed *occultus* flies upon it. I did so because the galls and flies of *A. solitarius* are much attacked by inquilines and parasites, and the percentage of gall flies that emerge usually is very low. I should like to direct your attention to the statement of Abbé Kieffer (6e) that *A. solitarius* galls have been observed on eight species of oak, but that flies have been obtained only from galls on three, *Q. Robur*, *Q. sessiliflora* and *Q. pubescens*. It was due to the breeding work of Mr Niblett that I first appreciated that the gall insect is almost invariably bred from slim fusiform galls, and that the more swollen galls are those usually yielding parasites and inquilines. Kieffer states (6e) that the gall of *A. solitarius* does not fall off at maturity, but remains fixed to the twig throughout the winter. I would not like to assert that this is so; admittedly many old specimens of these galls are found showing holes of emergence, but are not these galls that have been attacked by parasites or inquilines? It would be very difficult to prove the point, but I incline to the view that galls that have been attacked persist on the tree in the cases of this and some other insects. It may be suggested that in the instance of *A. solitarius* the point might be settled by the shape of the galls that persist, but I am not



convinced that galls that retain their slim fusiform shape have not sometimes been attacked by parasites or inquilines. I might mention that very bloated galls of *Andricus albopunctatus* Schlechtendal are those which have been victimised by inquilines of the genus *Synergus*; these frequently remain fixed on the twigs for long periods, whereas the galls that have not suffered such interference quickly fall. The name of the *occultus* fly should be *Andricus solitarius* Fonscolombe f. *occultus* Tschek.

What I have said of the forms *xanthopsis* and *occultus* indicates that members of the Section can justly claim to have added something definite to scientific knowledge. Mr Burkill has been successful in confirming the work of Adler in linking up flies in their species in several cases, these being:

<i>Andricus quercus radicis</i> and <i>trilineatus</i> .	<i>Neuroterus quercus baccarum</i> and <i>lenticularis</i> .
<i>A. glandulae</i> and <i>xanthopsis</i> .	<i>N. numismalis</i> and <i>vesicator</i> .
<i>Biorhiza pallida</i> and <i>aptera</i> .	<i>Diplolepis divisa</i> and <i>verrucosa</i> .
<i>Trigonaspis megaptera</i> and <i>renum</i> .	

Mr Burkill has also proved the connection of *Andricus ostrea* and *furunculus*, which Adler did not know.

One has to be careful in treating the galls of *Andricus testaceipes* Hartig and of *Andricus quercus radicis* Fabricius f. *trilineatus* Hartig (or *noduli* Hartig). Adler says (1b) the galls of *A. testaceipes* in many cases are only recognisable by a round or tumid thickening of the stalks and veins of leaves and that they also occur inside the wood of the shoot, when it is impossible to distinguish them from galls of *trilineatus*. Kieffer (6f) says the galls of *trilineatus* are found in twigs and on the leaf petioles of oaks or in the foliaceous parts of galls of *Andricus foecundatrix* Hartig, i.e. of artichoke or hop-cone galls. By the foliaceous parts of *foecundatrix* galls, I understand the enlarged bud-scales and bracts which form the bulk of the outer galls and I have never seen galls on these scales or bracts. I have failed to find inhabited galls of *trilineatus* in twigs or of *testaceipes* in the wood of shoots, but in enlarged woody bases of *foecundatrix* galls I have found cells, which I deemed to be galls, and from such cells flies which I identified as *trilineatus* have emerged. Continental authorities and also Cameron tell us that *trilineatus* flies vary in colour with their size. According to Kieffer (6g) large examples have the head and thorax red brown, the middle of the head, three bands on the mesonotum and some other parts being black brown, with a black spot on the abdomen; average-sized specimens have the head and thorax black with or without a brown spot; and small ones have the head and thorax red brown or black without spot. Dalla Torre and Kieffer (7c) say that the species varies extraordinarily in size and also in sculpture and colour. Apparently four of Hartig's species of *Andricus*, viz., *A. trilineatus*, *A. noduli*, *A. petioli*, and *A. turionum* are considered by some authorities to be forms of the sexual generation of this insect. *A. testaceipes* has the mesono-

tum black or black brown, sometimes with chestnut-brown streaks at the rear ends of the parapsidal furrows or near the insertion of the wings. Adler states (1b) that *testaceipes* flies cannot be distinguished with certainty from *trilineatus*. In the males there seems to be a distinguishing character in the antennae, which have fifteen segments; in *trilineatus* the five segments up to the last but one (that is segments 9 to 13 inclusive) are not twice as long as broad; in *testaceipes* the corresponding segments are twice as long as broad and even longer (6h, 7d). On this diagnosis I have bred from galls in woody bases of *A. foecundatrix*, males of *A. testaceipes*, and I have also bred large red brown females of *trilineatus*; I consider it highly probable that in a number of undetermined or doubtfully determined females I may have flies of both species. I think it may be asserted that there is more difference between flies of the form *trilineatus* than there is between some *trilineatus* female flies and normal *testaceipes* females.

It is a pleasure to know that Mr Niblett has bred flies of *trilineatus* from galls arising from oviposition by *A. quercus radialis*; these were male flies and very small specimens. A critical microscopic examination of some flies which Mr Niblett gave me makes me dubious as to the value of measurements of antennal segments in some cases, and I hope Mr Niblett in time will be able to build up a lengthy series of these flies to provide unchallengeable evidence of the antennal characters in British flies of the two species. However, Mr Niblett's most remarkable achievement in this breeding experiment was to have obtained from these small galls flies of the inquiline *Synergus apicalis* Hartig. These also are small flies and those I examined were females. This species is much associated with *trilineatus* and *testaceipes* galls. Whereas these inquilines should emerge in spring of the second year according to Kieffer (6i), in April and May according to Dalla Torre and Kieffer (7e), and in June according to Cameron (2e), Mr Niblett obtained them in September of the first year, *i.e.* at the same time of year as the gall-flies emerged. This small inquiline has been recorded from several other galls on the Continent, but Mayr seems to have been very suspicious of these records from larger galls (which include those of *A. foecundatrix*) and to have suggested that the inquilines came from galls of *trilineatus* which had been overlooked. Of course, when an inquiline emerges from a small gall imbedded in a larger gall (as is possible in this instance) the position does become complicated, and knowledge of this interesting possibility necessitates that one proceeds warily. As Mr Niblett bred this inquiline in September and it has usually been recorded as coming out in the spring, it would seem that it may or may not pass the winter in *trilineatus* or *testaceipes* galls. When Mr Niblett can tell us where these inquilines that emerge in September oviposit he will have made a still further valuable addition to knowledge. Some years ago I bred two specimens of *S. apicalis* from galls in the base of *A. foecundatrix* galls.

The inner galls, which may contain larvae or pupae of *A. foecundatrix*, when mature are hard, woody, more or less conical bodies,



3/16ths to ¼-inch long. At maturity they fall from the outer galls, the bracts and scales of which possibly help to squeeze them out by contraction. Five or six inquilines of the species *Synergus gallae pomiformis* Fonscolombe or *S. g. pomiformis* f. *vulgaris* Hartig\* may emerge from a *foecundatrix* internal gall. These flies have no very pronounced effect on the shape or substance of the gall, unless it be to stunt it when only one or two lodgers are present. It is far otherwise in the case of *Synergus evanescens* Mayr, which was recorded for Britain by Dr Bagnall in February 1928 (11). This fly severely restricts the growth of the internal gall, which is then very thin-walled and easily broken and which remains firmly fixed to the outer gall at its base. One to three *evanescens* flies may emerge from an affected internal gall of *A. foecundatrix*. Some time ago Mr R. B. Benson bred flies of the species *S. evanescens* from acorns, and others of us have since succeeded in obtaining flies of the same species from similar sources. I understand that Mr Benson has refrained from publishing this fact, as it has not been proved whether or not the affected acorns were galled by a recognised gall-causing fly; no such insect is known to have emerged from these acorns. I am bold enough to suggest that these inquiline flies failed to distinguish between a young *foecundatrix* gall and a young acorn, and that oviposition in young acorns proving successful became, or at one time tended to become, a practice in certain areas. Several times Mr Burkill has asked us to consider whether these inquilines might become gall causers.

Before leaving the subject of *A. foecundatrix* galls, it would be well to place on record what happens in the case of these galls within galls. Flies of *A. testaceipes* f. *sieboldi* Hartig, the agamous generation, emerge in spring, from February to April possibly, but with us I think most of these flies are out by the end of March; *A. quercus radicis* often has a prolonged period of emergence and comes out from February to April. Both these flies lay their eggs in oak-buds and, as I have stated, the galls appear on the midrib, a vein or the petiole of a leaf, or in the wood of a shoot. The flies of *A. foecundatrix* f. *pilosus* Adler, a sexual generation, emerge from small hairy galls on the male catkins about the end of May or beginning of June, that is distinctly later than the agamous generations *radicis* and *sieboldi*. As *pilosus* flies also place their eggs in buds it follows that buds in which *radicis* and *sieboldi* have oviposited, later may receive the egg of *pilosus*; in such a case it is the later oviposition that determines the most apparent form of the gall, the *foecundatrix*, artichoke or hop-cone gall, a much enlarged bud with greatly coarsened scales and bracts.

If numerous eggs are placed by a *radicis* fly in a bud which normally would produce a twig and the eggs are advantageously placed, the result may be a number of galls in the twig that grows from that bud. If such a bud later receives an egg from a *pilosus* fly, and the gall of *A. foecundatrix* is formed, the growth of the twig is arrested or partly

\*I consider *S. vulgaris* the form of *S. g. pomiformis* which winters in a gall and emerges in spring.

arrested, and it often becomes a woody base to the gall; in the case of a *pilosus* fly ovipositing in a bud that normally would produce leaves and not a twig, no such woody base would be developed; and in the case of a *pilosus* fly ovipositing in a bud that normally would produce a twig and that has not received eggs of *radicis* or *sieboldi*, the gall of *A. foecundatrix* may have a short twiggy stem at its base; such cases do occur. I have kept *foecundatrix* outer galls having short stems but bred no flies from them and I concluded that no secondary galls occurred in these outer galls.

It is sometimes considered that gall-flies show an uncanny sense or a most remarkable instinct in the selection of buds in which to place their eggs. In the cases of *A. radicis* and the f. *sieboldi*, as the galls appear on the mid-rib, vein or petiole of the leaf, or in the wood of a twig, it would seem that no very special selection is needed, but may it not be that in cases where the egg has not been properly placed, it fails to cause a gall? The berry or currant galls of *Neuroterus quercus baccarum* L. are produced either on male catkins or leaves; possibly this adaptability is one source of their abundance, and a ground for the rapidity with which the insect recovers from set-backs. In 1945 I attributed a swelling on the stalk of an acorn to a gall of *N. q. baccarum*, as many such galls were round about, but no insect came out of the swelling. The gall of *Neuroterus albipes* Schenck normally occurs on the leaves, which may be partially deformed; I found one of these on a catkin and reared a fly from it. Usually the galls of *Andricus solitarius* f. *occultus* appear on catkins the growth of which is arrested; I found one such gall on a very young leaf which had not emerged from amongst the bud scales, and that gall yielded a fly. It must be admitted that occasionally galls appear in abnormal positions.

This leads to an old question, whether *Andricus marginalis* Schlechtendal is a good species, or only a case of *Andricus quadrilineatus* Hartig, which normally causes galls on male catkins, having produced galls on leaves. Mayr (6k) took the view that the so-called galls of *A. marginalis* were only those of *A. quadrilineatus* occurring on leaves. Cameron (2f) favoured the same view. Adler (1c) said that the galls of *A. quadrilineatus* spring usually from the stalk of the flowering catkin, but exceptionally from leaves. The gall, he stated, is so like that of *A. marginalis* that it cannot be distinguished with certainty from it, and is possibly identical with it. He further asserts that the *A. quadrilineatus* gall grows both from leaves and flowering catkins in the same way as the galls of *A. marginalis* and *A. seminationis* Giraud. Adler seems to have considered that he obtained *marginalis* galls from oviposition by *marginalis* flies, but he does not state that the flies had an opportunity of placing their eggs in buds that would have produced catkins. He stated (1d) that he saw *quadrilineatus* flies in the open air prick flower buds, and that he marked several buds which were pricked, and could affirm that *quadrilineatus* galls were formed on catkins growing from the marked buds. For my own part I think that



*A. marginalis* is a synonym of *A. quadrilineatus*. I have found the galls on leaves twice, once in North Essex and once in Surrey.

Adler's work was very carefully done, but I am not convinced that on all occasions he had oaks, that were old enough to produce catkins, readily available for his experiments, and that he sleeved flies on such oaks. I think it was possibly because of this that Adler (1e) induced flies of *A. seminationis*, which usually cause galls on catkins, to cause galls on distorted leaves. I have been keenly interested in the galls of *A. seminationis* for a long time because of the manner in which some of them persist on the trees until late autumn in some years. It may be that the persistence of the galls is due to a great extent to attacks by inquilines or parasites, but occasionally a gall fly emerges from a gall collected in late summer or early autumn. I should like to accumulate more evidence of such occurrences; of late years owing to adverse weather conditions and other misfortunes I have not been able to collect many galls of this species, and those I have obtained have yielded few gall-flies. The gall of *A. seminationis* can first be detected by the swollen stalk of the catkin; at times if part of the stalk dies off, the remaining part is very greatly swollen. The actual fusiform gall, which may have a long stalk and a rather long point, emerges from the swollen catkin stem, but its growth may be considerably delayed, possibly through the attacks of inquilines in some cases.

Galls of flies with alternating generations are known by the names of the flies which emerge from them. Except in the instances of flies and galls which became known through Adler's and other breeding experiments, it is plain that the gall was first associated with the fly that emerged from it, the fly, which by placing its egg caused the gall, not being known at that time in the case of an alternating generation. I may have referred in some cases to the gall-causer and the fly emerging from the gall as if they were the same. Actually this is so with *Andricus albopunctatus*, *A. quadrilineatus* (which is considered to be the synonym of four of Schenck's species) and *A. seminationis*, three agamous species none of which has an alternate generation, and which often complete the life-cycle in a year; sometimes these flies lie over in the gall until the third year or longer. The galls of these three species appear in spring; first *A. albopunctatus* which takes the place of a bud, or perhaps one should say is a metamorphosed bud; second *A. quadrilineatus*, a variably shaped gall on the male catkin, which often shows a tendency to a thickening of the stem; thirdly *A. seminationis*, a fusiform gall appearing on a very distinctly thickened catkin stem, sometimes two or three galls appearing on one swollen stem before it completely shrivels. By October the flies of these three species are perfectly formed, but they do not emerge from the galls until the following spring or later; they escape (as all these flies do) by biting a hole in the gall. At one time these three species of flies were included in a genus named *Aphilothrix* or *Aphilotrix*, but subsequent to Adler's work, which established the alternating generations of so many of these flies, that genus was eliminated and the flies were included in the earlier

created genus *Andricus*. Kieffer (61) tells us that *Andricus* was so named to imply the existence of males in contrast with the genus *Cynips* in which the species consist wholly of female flies; consequently in obedience to the rules of scientific nomenclature, we have these three species, in which no males are known, grouped in a genus which is named from the existence of males being known in its species as determined at the time the name was chosen.

Flies of *Andricus albopunctatus*, *A. quadrilineatus* and *A. seminationis* are not distinguishable with certainty except by breeding them from galls. They are likewise not distinguishable from flies of *A. callidoma* Hartig and *A. nudus* Adler f. *malpighii* Adler, but these flies, which I consider of somewhat rare occurrence in Epping Forest, are agamous with alternate sexual generations. The alternate of *A. callidoma* is the f. *cirratus* Adler, which emerges from a small gall on the catkin, the gall bearing at its apex a tuft of long white hairs. The fusiform gall of *A. callidoma* takes the place of an axillary bud and appears in July or August. The gall of *A. nudus* is a very small one occurring on the catkin; in my experience there is usually only one gall on a catkin; this gall carries a few hairs or is bare. Its alternate gall, a fusiform one, is rather smaller than that of *A. callidoma* and does not appear until later in the year, in September or October. As the galls of *A. callidoma* and *A. nudus* f. *malpighii* are so much alike and the flies also resemble each other, the greatest care should be taken to note the dates when the galls are found and collected. It is possible that the galls of these agamous generations are sometimes confused, and one would like to advise that Adler's account (1f) of his breeding experiments should be carefully studied when the breeding and identification of either of these species are undertaken. It is seldom that I have found these galls, and my own opportunities of breeding them have consequently been restricted. I have found late in the season, in September and October, small greenish hairy galls, obviously immature, which possibly were very late or delayed f. *malpighii*. Nothing emerged from these galls; such is usually the case with mysteries. My experience is that *A. albopunctatus* and *A. quadrilineatus* are not difficult to breed if one can give sufficient attention to the galls, but *A. seminationis* is not so easy, as it is much subject to attacks by inquilines and parasites. I have been fortunate enough to breed a few f. *malpighii* flies, but have failed with the *A. callidoma* galls I have collected. I have found few galls of *A. nudus* and have seldom bred perfect insects. *A. callidoma* f. *cirratus* galls occur plentifully at times in an area where the oaks are *Q. sessiliflora* and the flies are easily reared if the galls can be kept free from mould. *A. quercus radialis* is another case of flies, although perfectly formed by the autumn of the second year, not emerging until the next spring, and possibly it is the same with *A. testaceipes* f. *sieboldi*. I find that *radialis* flies taken from the gall in the autumn of the second year are extremely sluggish and require a long time in the cyanide bottle before being killed. I doubt if it is always realised that the galls of *A. radialis* and



f. *sieboldi* do not become easily visible until their second year, and that it is in the third year of the galls that the earliest flies emerge. The eggs of the f. *trilineatus* and of *A. testaceipes* are laid in the autumn, and it is in the course of the next summer and autumn that the galls become noticeable, and the ensuing spring before the flies may emerge. My experiments in breeding show that flies of *A. fecundatrix* do not emerge until the third year, and that they may lie over two or more years.

It has been my wish to give more attention to *A. quercus corticis* L., and particularly to the f. *gemmatus* Adler, the galls of which I have failed to find. Old galls of *A. q. corticis* often are only too easily visible in wounds on oak trees, but these are galls from which the flies have departed. A careful inspection of such an array of old galls sometimes reveals a few inhabited ones or indications of possible ones below the bark. I have found galls in this way and have bred flies from them. Adler stated (1g) that galls of *corticis* also occur on thick oak roots, and I think they are to be found in the bark of the bole where the expansion of the bole in the course of growth has caused a crack and a more or less tender place in the bark. Kieffer says (6m) that in such cases the galls are usually near the ground, less often away from the ground. Adler (1h) discovered the galls and flies of the sexual generation, f. *gemmatus*, in the course of his breeding experiments, but he did not succeed in getting galls caused by *gemmatus* flies. Obviously it is not easy to have oaks with tender cracks in the bark, or with tender bark at the sides of wounds where the flies may oviposit, ready for the experiment when you want them. I know of no successful experiment in inducing the flies of f. *gemmatus* to oviposit, and so far as I know no one has definite knowledge of how long the insect *A. q. corticis* requires for its development, that is from the time the *gemmatus* fly lays its egg to the time when *corticis* bites its way out of the gall. The life history of the *gemmatus* generation, once a fly of *corticis* has been bred and placed on a suitable sapling, would appear to be a much simpler matter. Perhaps I should emphasize the contingency "once a fly of *corticis* has been bred," because although I find it none too easy to spot these galls in the stage when they are inhabited, other insects are able to do so, and even when one does succeed in finding inhabited galls, there is the possibility that the inhabitant may not be the gall fly. The inquiline, *Synergus incrassatus* Hartig, is often bred from *corticis* galls, as it is from galls of *A. q. radicis* and *A. testaceipes*, f. *sieboldi*. A word of warning may be given anent *S. incrassatus*; the face of the female is black and of the male yellow or reddish yellow, so that anyone who breeds black-faced and yellow-faced flies from the galls mentioned must not jump to the conclusion that he has bred two species, or that one of the forms must be the gall fly. Anyone who with determination sets out to find inhabited galls of *A. q. corticis* and to breed the flies is almost certain to have an interesting time.

Several times I have endeavoured to impress on members of the Plant Galls Section that we are more or less ignorant of what happens

in the matter of oak-galls on parts of the trees which are beyond the range of our observation. Occasionally gales of wind may bring down trees or parts of trees in leaf, but an examination of such windfalls has not added much to my own knowledge, except that on one occasion I bred a very high proportion of parasites from galls caused by *Neuroterus* flies. I have found on fallen trees and branches the more common galls only\*, but I incline to the view that our failure to find some galls that we think should be in certain areas because we find their alternate generations there (such galls as those of *A. corticis* f. *gemmatus* and *Diplolepis divisa* Hartig f. *verrucosa* Schlechtendal) may be due to their occurring normally out of our reach. Efforts to obtain these galls and to study them and their inhabitants should be strenuously continued.

In recent years in the autumn, especially after stormy nights, I have searched under trees, no branches of which are within reach from the ground, for galls that may have fallen, and have collected numbers of galls of *Andricus curvator* Hartig f. *collaris* Hartig; these galls until ready to fall are covered almost entirely by the bud scales and are difficult to find. One morning in November 1944, in a comparatively short time I picked up over fifty of these galls in Epping Forest. I have found a few galls of *Andricus inflator* Hartig f. *globuli* Hartig in the same way. In 1945, possibly because of weather conditions, *collaris* and *globuli* galls began to fall towards the end of September; this I think is earlier than usual. For about four weeks *collaris* galls continued to fall, and I doubt if any remained to fall in November. I have bred many gall-flies from *collaris* galls picked up from the ground, but no inquilines have come out of such galls†. *Collaris* galls, varying in size, collected from trees at Selsdon Wood, Surrey, in September 1944, yielded mainly inquilines.

In the autumn of 1942 I picked up from the ground a number of galls of *Trigonaspis megaptera* Panzer f. *renum* Hartig. These galls were recognisable by their light green colour, but were roundish rather than the usual kidney shape that one expects them to be; a few flies were bred from them. The handsome *T. megaptera* makes its appearance in May or June, and prefers a tender leaf for oviposition; such

\*This must be qualified in the light of a recent experience. On Easter Monday, April 22, 1946, I found a recently broken bough of an oak-tree at Hawk's Mouth, Epping Forest. On it were galls of six species of Cynipids, viz., *A. albopunctatus*, one gall; *N. aprilinus*, a fair number, the flies having emerged; *N. q. baccarum*, a good number in the young stage; *B. pallida*, several; *A. callidoma*, f. *cirratus*, and *A. solitarius*, f. *occultus*. From *occultus* galls I bred 38 flies, and 316 galls showed holes from which flies presumably had emerged. The *cirratus* galls were in a young stage and not well developed. Later typical *cirratus* galls were found on a near-by tree and were only collected by a spring and a snatch. It is not possible to estimate with accuracy the number of *cirratus* galls. This experience modifies the remarks on *occultus* and *cirratus* earlier in this paper.—J. R., 9/5/46.

†This is no longer correct. Early in 1946 I bred both inquilines and parasites from *collaris* galls picked up in 1945.



tender leaves are found on very young oaks, or on the second growth of twigs on older trees; I presume that leaves on the second growth of twigs high up the trees are suitable for the flies. It is eighteen months or more before the *renum* generation comes out of the galls; in this generation the flies are wingless, agamous and small, but they will walk as much as four feet up the bole of the tree to lay their eggs, although in many cases the galls are much nearer the ground. Another wingless fly, *Biorhiza pallida* Olivier f. *aptera* Bosc, comes from a gall on a root-let; it causes the formation of oak-apple galls by laying its eggs in buds; consequently it has to work its way from the root galls to the surface of the ground, walk up the tree trunk and along a bough to the position where we see the oak apples in May. The gall-flies that emerge from the oak apples are of both sexes; at one time it was said that the females were wingless or had rudimentary wings in a high proportion of cases, but the breeding experiments of members of the Section show that on the contrary female flies without well-developed wings are very rare in this part of Britain.

During 1943 and 1944 in autumn, I was somewhat surprised at the great numbers of galls of *Neuroterus tricolor* Hartig f. *fumipennis* Hartig to be seen lying on the ground in Epping Forest. I had regarded this fly and its alternate as the least common of the four spangle-causing species of *Neuroterus*, but it was not so in those years. The flies of *N. tricolor* appear somewhat later than those of *N. quercus baccarum*, *N. albipes*, and *N. numismalis* Fourcroy f. *vesicator* Schlechtendal, and like *T. megaptera* they have recourse to tender leaves and frequently to leaves on the second growth of twigs when laying eggs. As numbers of f. *fumipennis* galls were seen lying on the ground below tall trees, it is obvious that *N. tricolor* finds leaves suitable for oviposition high up on such trees.

*Adleria* (*Cynips*) *kollari* Hartig is a fly of much interest. *Cynips* was the name given to certain flies by Linnaeus, but as there has been much dispute and confusion over which flies the name should apply to, I think the simplest way out of the difficulty is to drop the name *Cynips* completely and use *Adleria* for the flies that in Europe were classed as *Cynips* until comparatively lately; this new name has been adopted to some extent on the Continent. No males are known in the genus, of which *kollari* is the only common British species. The history of this gall in Britain is fairly well known; it was introduced to the west of England over a hundred years ago, and is widespread. The development of the gall and its causer will repay study. In my opinion the galls are not noticeable until the late spring of the year following that in which the eggs are laid; in their early stages they are often pointed and purplish green and may not be recognised as *kollari* galls. The flies may appear in August or September, but quite a number pass another winter in the galls, and these may emerge as early as the succeeding June. Two *Synergi*, *umbraculus* Olivier (syn. *melanopus* Hartig) and *reinhardi* Mayr inhabit these galls in Britain and come out in May or June, when young galls of *kollari* are ready to receive eggs.

These two *Synergi* seem very rarely to attack other galls in Britain and one wonders if they were known here prior to the advent of the *kollari* gall.

Some years ago in a locality in Buckinghamshire, where *Q. sessiliflora* is frequently met with, I found some galls resembling those of *Andricus inflator*; but all in the position of lateral buds and less globular than *inflator* galls usually are. One female fly was bred and it had a yellow abdomen; to me it seemed possible that this was a specimen of the insect referred to by Hartig as *Cynips axillaris*, by Mayr as *Andricus inflator* var. *axillaris*, and by Fitch as *Andricus curvator* var. *axillaris*. I hope to obtain more galls from this area.

In the late autumn and early winter of 1944 and 1945, I was pleased to get evidence of a distinct increase of the galls of *Diplolepis* (*Cynips* according to Professor Kinsey of Indiana University) *quercus folii* L. in parts of Epping Forest. This was the more pleasing as I found but few of the galls of the spring generation (f. *taschenbergi*) in the neighbourhood, and I am tempted to ask if the agamous generation is finding buds for egg-laying beyond the reach of our observation. In northern Europe there is a variety of this species named *atrifolii*, which in the main is piceous or jet-black in colour. From *folii* galls gathered on the Surrey hills I have bred flies darker than the typical form, and I would suggest the breeding of flies from galls collected in high and exposed situations and also of the breeding of flies from small and scrubby galls. Other flies of this genus and their galls should receive attention. Much more material is required for the study of the sexual generation (f. *verrucosa*) of *D. divisa*. I am dubious whether the flies we have bred are the same as those described by Schlechtendal, or whether our galls fit his description. Is it possible that two species that are very similar are passing as *D. divisa*? Also an alternate generation for *D. disticha* Hartig (a *sessiliflora* gall and fly) probably exists. Of *D. agama* Hartig I am quite ignorant, but Mr Burkill finds the galls from time to time in Surrey.

The main object of this compilation was to place on record the work of the Plant Galls Section in regard to the oak-galls, and to concentrate the knowledge gained in years of persistent field work in (and sometimes beyond) the Society's area and by the breeding and examination of flies. Personally I am proud of the results obtained, and I regard them as worthy of the serious attention of the general body of the Society's members. If the knowledge gained is not handed on to future workers among the Society's members, I think the Society will be the permanent loser.

This is only one part of the Section's activity. Mr Niblett's work on pea-galls on Wild Roses has been published in *The Entomologist*; that work is of outstanding value, and Mr Niblett has also achieved much success in the matter of Cynipid galls on plants other than Oaks and Roses. Mr Burkill's great experience of galls of all kinds in the field, coupled with botanical knowledge and a fine memory, is an asset members of the Society should value and utilise. My own part in the



work has been mainly in breeding and examining the gall-flies. A large number of flies I have bred have been accepted for the collection at the British Museum (Natural History), and include two or three forms which were not previously represented in the Museum's collection.

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In the past twelve years Mr Niblett has made numerous contributions to *The Entomologist* on Cynipid Galls and Flies: these are indexed in that magazine.

## Plant Gall Records for 1945.

Compiled by H. J. BURKILL, M.A., F.R.G.S.

ON the whole the year was disappointing, the weather conditions were unsuitable, and many of the usual species were not in evidence.

Among the more interesting are the following, which include some that are new to our lists and possibly to British records.

**Cynipidae.** Mr Niblett's linking up of *Andricus occultus* Tschek with *A. solitarius* Fonsc. was confirmed at Fetcham, where galls of the former were thrown down under young oak-trees, and later the galls of *solitarius* appeared on these trees. In the autumn of 1944 sleeving of *Diplolepis divisa* Htg. provided *verrucosa* Schenck next spring on the sleeved branches, and later on *divisa* was to be seen in some numbers. Mr Ross gave a paper to the Society in which he reviewed the work done on Alternating Generations of the Cynipidae (see pp. 31-46).

Mr Niblett recorded *Aulacidea pilosellae* Kieff. on *Hieracium vulgare* Tausch, and *A. hieraii* Bouché on *H. umbellatum* L. *A. tragopogonis* Thoms. was plentiful near Bookham, and *Isocolus rogenhoferi* Wachtl., after being scarce for some years, increased again, probably because of the decrease in the number of Blue Tits which peck the galls and extract the larvae. Galls of *Rhodites mayri* Schl. on *Rosa canina* L. were found in two places in the Box Hill district, both fresh localities.

**Chalcidides.** Mr A. A. Dallman of Doncaster sent me some stems of *Calamagrostis epigeios* Roth. galled by *Isosoma* sp., and also by some different insect.

**Trypetidae.** Mr Niblett again reports finding *Myopites blotii* Breb. on *Pulicaria dysenterica* Gray.

**Cecidomyiidae.** *Lamium Galeobdolon* Crantz in Selsdon Wood was found to be plentifully galled by *Dasyneura galeobdolonitis* Winn., and a few days later a small number of galls were seen near Polesden Lacey. Mr Swanton lists this species, so it is not new to Britain. Mr Niblett has added *Harmandia populi* Rubs. on *Populus tremula* L. to the British list, and reported finding *H. tremulae* Winn. *H. cavernosa* Rubs. was found on Bookham Common also on *Populus tremula*. Mr Niblett got *Contarinia schlechtendalia* Rubs. on *Sonchus oleraceus* L. and *S. asper* Hill, *C. pilosellae* Kieff. on *Hieracium vulgare* Tausch., *C. barbichei* Kieff. on *Lotus corniculatus* L., *Dasyneura aparines* Kieff. on *Galium aparine* L., *D. similis* F. Low on *Veronica Chamaedrys* L., *Macrolabis pilosellae* Rubs. on *Hieracium vulgare* Tausch, *Janetiella thymei* Kieff. on *Thymus Serpyllum* L., *Schizomyia nigripes* F. Low on *Sambucus nigra* L. *Contarinia lonicerearum* F. Low was found at Fetcham on the same



host plant, while the var. *laciniata* Mill. on Bookham Common had the leaflets folded over by a yellow *Cecidomyid* larva. *Salix atrocinerea* Brot. at Bookham was plentifully attacked by *Dasyneura pseudococcus* Rubs., while *S. caprea* L. also showed a small number of the same species, whose occurrence in England was recorded by Dr Bagnall some years ago in *The Vasculum*. *Vicia tetrasperma* Moench. at Bookham was galled by both *Dasyneura viciae* Kieff. and *Contarinia cracca* Kieff. *Galium uliginosum* L. carried large numbers of the conspicuous white galls of *Geocrypta galii* H. Low on the western portion of Bookham Common. *Rosa souliana* (garden) was galled by *Wachtliella rosarum* Hardy.

**Eriophyidae.** Mr Niblett reports *Eriophyes ulmicola* Nal. on *Ulmus campestris* L., *E. pseudoplatani* Nal. on *Acer Pseudoplatanus* L., *E. rudis longisetosus* Nal. on *Betula pubescens* Ehrh., *E. violae* Nal. on *Viola Riviniana* Reichb., and *Eriophyes* sp. causing a thick felting on the under surface of the leaves of *Viburnum Lantana* L. Mr Dallman sent me some stems of *Scabiosa Columbaria* L. with the leaves altered into masses of fine filaments, evidently Houards 5464, known from Central Europe. On microscopical examination *Eriophyes* and their ova were seen. *Sambucus nigra* L. was heavily attacked in the early summer by *Epitrimerus trilobus* Nal., and the var. *laciniata* Miller also had the leaf-margins rolled up, apparently by the same species of mite. *Galium uliginosum* L. was very heavily attacked by mites, patches of the plants being entirely altered, metamorphosed, distorted and rendered sterile; the flower-heads remained green, producing no petals. Two species of *Eriophyes* and one of *Phyllocoptes* were seen under the microscope. *Pyrus Malus* L. was found on Bookham Common with the margins of the leaves rolled upwards by *Eriophyes* sp. This has been known to us from Shropshire, from Witley, Surrey, and from Northamptonshire. *Vicia tetrasperma* Monch. at Bookham had the leaves rolled upwards by *Eriophyes plicator* Nal. var. *trifolii* Nal.

**Nematoda.** *Stellaria media* Vill. aborted and twisted with the stem inhabited by Eelworms. *Agrostis alba* L. swollen at the base of the leaves. *Anguillulina* sp. but not *A. graminophila* Goodey. Mr Niblett reported *Tylenchus* sp. on *Leontodon taraxacoides*, in the flower-stalk.

# Some Notes on Birds in Central Poland.

By D. A. T. MORGAN.

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## INTRODUCTION.

THE following observations were made within a radius of 200 kilometres from Posen, which lies midway between Berlin and Warsaw, in 1940-45. It does not claim to be a complete account owing to the lack of freedom suffered by a prisoner of war. Furthermore, absence of optical equipment precluded the accurate identification of the small birds except in obvious instances. The idea is to give a rough contrast between that district and England.

A description of the topography and artificial features of the country will not be out of place. The soil is entirely sandy with shallow surface soil, and the area very flat and in parts low lying and swampy. Occasionally it rises to low slopes of about two hundred feet. The woods are almost entirely coniferous, with birches prevalent in some areas. The seats of the pre-war rich have been planted with deciduous trees, such as beech, elm, oak, and chestnut. Apart from these there are some thickets of low thorn scrub, but for the most part there is little cover for warblers or finches. There are no large areas of water. The river Warthe flows through one part of the area under observation.

Small villages are dotted all over the landscape, and the houses are of an old single-storey type with small open gardens not suitable for nesting birds. Bird boxes are hung up in nearly every garden, but by what species they are occupied I am unable to say.

Most of the land is developed by farmers for grain, chiefly rye, barley, and oats. Roots and potatoes are also cultivated. There are very few pasture fields, and most of these lie in the damp hollows, where the soil is badly drained. The drainage consists of ditches, most of which are overgrown.

The exception to this type of country is the artillery range, lying to the north of Posen. Reputed to be the biggest in Europe, it is ten miles long and three miles wide. Heavily wooded with pine and birch, it is allowed to be in its natural state except for some afforestation work. Part of it closely approximates to the northern scrub mentioned in E. M. Nicholson's "How Birds Live" (1927). From this area many interesting records have been obtained. After giving an account of the species in approximately Check-List order I shall endeavour to summarise the main differences between the occurrence of birds in England and central Poland.

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## ACCOUNT OF SPECIES.

The numbers following the birds mentioned are those of Witherby's revised "Check-List of British Birds" (1941). In some cases I have



given the number or name of the Continental form, where this must be presumed the most likely to occur.

Of the crow family, the Hooded Crow (2) is the most widely distributed, occurring in every month of the year, although in the breeding season only a few are seen. There is a marked increase from September to October and most disappear in May. They replace the Carrion-Crow in this area. Rooks (4) and Jackdaws (5) are equally common and are found in large flocks. They breed in the small oases of deciduous trees round the mansions and their numbers appear to be controlled by these. Both Magpies (7) and Jays (10) are common, fifteen of the former being seen at one time. I have one record of a Nutcracker (8/9) in November. At rest it suggested a large starling, but the flight was weak.

The first big contrast is found in the Starling (14) population. The bird is rather scarce here, although it occurs in small flocks. But the numbers do not compare with those in England, and there is little trace of nightly congregations before roosting.

Several pairs of Golden Orioles (17) were observed in 1942 and 1943. They frequented the clumps of deciduous trees, and tree belts along the roads. Persistent singers, they were most active in song in the early morning and continued until the end of July. They were sometimes mobbed by Starlings, but usually kept to the cover of tall trees. The call was a harsh cat-like cry. The date of arrival in 1943 was 7th May.

In spite of lack of cover different species of finches were abundant in the winter. Hawfinches (18) were most commonly observed on the range, but were sometimes seen in the small orchards near the towns. Greenfinches (19) were abundant throughout the year, but I have no record of Goldfinch (*Carduelis c. carduelis*). The land is too well cultivated and there are few fruit-trees. It is ideal country for Siskins (21) and Redpolls (23), and the pinewoods are alive with them. The Siskins are also found in the large gardens, and on 16th September a young bird was seen just able to fly. Linnets (30) were fairly numerous in the mixed flocks. Bullfinches (*Pyrrhula p. coccinea*) were also abundant on the range, and anywhere where there was thick cover. The Chaffinch (40) was, next to the Siskin, the commonest finch. I have no record of Crossbills (36). House- and Tree-Sparrows (61, 62) are abundant, the latter showing no preference for damp localities.

For the buntings the country was ideal, and they were some of the most abundant small birds. Corn-Buntings (43) were common on the cultivated fields and Yellowhammers (44) equally so on the range and the farming areas. The Ortolan (50) was almost more numerous than the Corn-Bunting, and was probably the most noticeable small bird in the open fields in summer. First heard in 1943 on 30th April, it sang from any perch from the tops of tall trees down to the root-fields, and at any time of day. The song is distinctive. Compared with the Corn-Bunting, it is reddish brown in colour and very squat, in addition to being smaller. In one instance there was a distance of 200 yards between singing males, and a pair of Corn-Buntings had a territory in

between; no animosity was shown by the respective males. The song continued until late August.

Skylarks (70) and Crested Larks (68) were abundant, but in spite of apparently suitable terrain I never heard the Wood Lark (69). The Crested Lark occurs all over the area, even in the big towns, and its shrill call makes it immediately noticeable. It feeds frequently in the streets in winter on the horse-droppings, which may explain why it is able to tolerate the intense cold, when other small birds disappear. It has a more pronounced crest and appears greyer and larger in the field than the Skylark.

The Meadow-Pipit (76) is well distributed, though not common, increasing in numbers in the autumn. The Tree-Pipit (75) I never heard, but birds which may have been Tawny Pipits (74) were seen in September 1940 and autumn 1941. They had very long tails.

Presumably only two species of Wagtails occur, the White (91) and Blue-headed (84). They are both widely distributed, the White being more numerous in summer than winter.

Nuthatches (*Sitta europaea caesia*) were common on the range. All the titmice, presumably of the Continental forms, were common, with the exception of the Willow (*Parus atricapillus salicarius*) and Crested (106). I have two records of the former and only one definite of the latter. Several of the Northern form (110) of the Long-tailed Tits, with pure white heads, were observed in January 1944. Goldcrests (126) were also common. According to Wardlaw-Ramsay, Firecrests (128) are not found in Poland.

The Great Grey Shrike (114) was seen every year and particularly favoured the range in winter. There is only one summer record in June 1943, and this may have been a Lesser Grey (113). Its trilling note attracts attention at a great distance, and even more than the Red-backed it kept to the top of any tree, particularly the taller ones. Red-backed Shrikes (119) were observed in the summer, but no Woodchat (116), which was, however, present in Eastern France in 1940.

Spotted Flycatchers (121) were abundant and remained until August. They arrived at the end of April.

Warblers were scarce owing to the lack of cover for breeding. Chiffchaffs (130) were common, but Willow-Warblers (132) were heard only on passage. A Wood-Warbler (135) was heard on 1st May. First and last dates for Chiffchaff include the first week in April and first week in October. I have a record of a Warbler singing on 4th June 1942. It was either a Marsh (150) or a Reed (149) from the character of the song, and it stayed for a week on the outskirts of a town. A White-throat (163) was singing on 4th July 1942.

Fieldfares (173) were seen several times during the winter, November the 16th being the earliest date. There are two records of the Blackbird (184), rare in this country, though common further south in Czechoslovakia in 1945. Two were seen on 3rd December 1941, and a male on 19th August 1943. There is no definite record of Song-thrush



(177). Several birds of the genus *Turdus* were seen from time to time but not definitely identified.

Wheatears (186) were observed most commonly on the autumn migration, the maximum together being five. Two were seen in June, and one was observed near a heap of stones in a town during the summer of 1944. A male Whinchat (197) was seen on passage on 14th May, and a pair on 13th July, which may have bred. Stonechats (*Saxicola torquata rubicola*) are not found in this area. There is one record of the Common Redstart (201) on 12th June 1943. On the other hand, the Black Redstart (202) is very common and appears to take the place of the Robin in England. It is found at all seasons, although more numerous in summer. It is indifferent to man and is found in isolated houses, in villages, and also the large towns. It is partial to buildings and rare in the open country. I have heard it singing in February and it is a persistent singer. In Eastern France (1940) both species are equally common.

A Nightingale (203) was heard in 1941. The Robin (207) was very rare. One frequented the garden of a mansion in March 1943. There are no records of Hedge Sparrow (210) or Wren (213). Possibly the climate is too severe.

Swallows (220) and House-Martins (222) were very abundant; the primitive roads and bad sanitation suited them. The only locality for Sand-Martins (223) was on the River Warthe at Posen. Arrival dates were 17th April for the Swallow and 21st for the House-Martin, and departure dates October for both species. Swifts (225) were also abundant.

The Hoopoe (232) presumably breeds, a young one being seen on 14th August 1941. The wing-beats were aimless and zigzag, suggesting a large butterfly in flight. I was told they were more common where the trees were old and full of holes. It is a ground-feeder like the Roller. Migration dates were 8th April and 9th September.

Rollers (233) were seen only in September. Five were seen together in 1940 and eight in 1942. The flight was strong and tumbling.

Both Green (235) and Spotted Woodpeckers were common. I was unaware of the existence of the Grey-headed Green Woodpecker (*Picus c. canus*) at the time, nor was I able to ascertain the species of the Spotted Woodpeckers. A Wryneck (239) was seen several times in a garden in summer. It was also common in France in the old orchards in 1940. Cuckoos (240) were less numerous than in England, although caterpillars constituted a pest. They did not appear until May.

The status of Owls was uncertain, the Little Owl (*Athene n. noctua*) being heard once.

Poland is well favoured by hawks, being open country and well supplied with food in the shape of rodents, reptiles and small birds. Shotguns or any other firearms were forbidden. Including possible records of Black Kite (279) and an unidentified Eagle, eleven species of Raptores were observed. The Peregrine Falcon (259) was a frequent winter visitor, and one was watched pursuing a flock of game-birds. The Hobby

(261) was the commonest small hawk, and the open country was dotted with pinewoods, which suited it. Starlings were a frequent prey. The earliest date of arrival was 1st May and departure date 16th October. The Merlin (262) was seen twice, both winter records. The Kestrel (263) was surprisingly scarce, but there are records chiefly in the summer and autumn.

On 20th April 1943 an Eagle flew quite close. At first in the distance its large size suggested a Stork. Deliberate beats with long wings precluded its identification as a buzzard or harrier, both of which are common here. The head was brown and there may have been white in the tail, though this may have been a trick of the light. Several species of eagles frequent the Carpathians.

The Common Buzzard (269) was widely distributed and there was a pair in nearly every large wood. They occurred throughout the year, even in severe frost. A Rough-legged Buzzard (268) frequented the range in the early winter of 1942-3. The lightish colour of the mantle, the underwing showing alternate light and dark shading, the large size, and two dark patches on the underside of each wing, made it easy to identify. When first seen it circled like the Common Buzzard, and the white in the tail was clearly seen. Frequently hovering and quartering the ground, it was heavier in flight than a harrier and less agile in turning. When plucking prey it held its wings widely outspread and then flew to a perch in a tree.

Although harriers were often seen, identification without binoculars was difficult. A male Hen-Harrier (273) was seen in the autumn of 1941. In 1941 harriers were observed all through the summer, but most were autumn records. Montagu's Harriers (272) were seen in France in 1940. In 1944 a Marsh-Harrier (271) with white head was seen in April. Very dark brown colour, large size and slower wing-beats than other species, were distinctive.

There are about six records of the Sparrowhawk (277), and a female dropped dead in a barn on 1st November 1941. Although I saw a Red Kite (278) in France in 1940, the only bird I saw in Poland answered to the description of a Black Kite. A pair of birds were observed in August 1940. They had the characteristic "elbow" wing of the Red, but were darker on the back, and the tail was only slightly forked. Another point was that they were in the neighbourhood of a river, and I believe that abroad the Black is seldom far from water.

The White Stork (285) deserves mention at some length. They arrive during the month of April, the earliest date being the 5th. For some time after they spend long intervals soaring very high up in groups and later in pairs, sometimes revisiting old nests. These are often placed on the gable end of barns or houses, but sometimes in trees. A cart-wheel is often fixed by the owner of the property, as they are supposed to bring good luck. The young birds were hatched at the beginning of July, both birds taking part in the incubation. The male was distinctly larger when both stood together. The food probably consisted mainly of frogs, which are found here in enormous numbers. The cornfields are



alive with them. The storks come down and are indifferent to the tractors, which they follow round the field deliberately. About the middle of August they begin to collect again, and on 17th August 1941 twenty-two were seen circling together. On 25th August thirty were seen. On 17th August migration apparently took place. Over sixty were seen, and they were moving south-west. A straight line of ten spaced out at equal intervals led the rest about sixty in number. The leading bird was some distance in front of the party. I never saw this happen on any other evening, so do not think it was an evening flight. Only isolated birds were observed after 25th August. In 1942 and 1943 very few were seen after the end of August. Possibly the cold climate of Poland accelerated their departure.

Common Herons (289) were seen flying over occasionally. Geese and Ducks flew over but none were observed at close quarters. There is a record of one of the Divers. The bird was mobbed by Hooded Crows near a railway siding in Lodz. It uttered hoarse barking cries rather like a seal.

Woodpigeons (380) were present but very scarce owing perhaps to lack of suitable food.

As far as I could discover, no *Iimicolae* bred in the area, with the possible exception of the Lapwing (449), which was peculiarly scarce. The records of this bird consist almost entirely of birds flying over. There is one record of them on the ground on 31st July 1942. On 5th April 1941 a flock was seen and one odd bird. On 21st June more were seen but not large numbers. On 29th September another flock passed over, and twenty on 20th September. On 22nd April 1943 two pairs were performing the courtship flight but there is no evidence that they remained to breed.

There are four records of Curlew (388) flying over, one of them in March. There were only two records of Common Snipe (395), one in September and one in November. There are three records of Wood-Sandpiper (423), all in August. Greenshanks (432) were seen three times in August and September. Four Redshanks (429) were seen and heard calling on 7th July 1942, and were doing a partial courtship flight. The following record may be of interest. On 20th September 1941 in a ploughed field in a low-lying area a flock of about twelve waders was seen about for two hours, apparently resting on migration. Approximately the size and colour of knots, they were not this species. Grey and white colouration predominated, and in flight a shrill whistle "tee-oo," accented on the second syllable, was heard several times. They may have been Terek Sandpipers (420).

A pair of Little Ringed Plovers (438) was observed in a sandpit near Posen. The shrill flight call and absence of white wing-bar were noticeable. They probably bred. Several more pairs were noted on a shallow river in South Poland and definitely bred, young being seen.

Two Common or Arctic Terns (469, 470) were observed on passage on a river in South Poland, at least 500 miles from any coast. The Black-headed Gull (478) was seen during the summer, forty being seen

on 2nd July 1941, a stormy day. One was seen in April. In the summer of 1943 about a hundred were present from April to early July, after which they all left. They were in breeding plumage. On one occasion they were accompanied by one of the larger gulls.

Two Corncrakes (504) were heard in 1942, one on 7th July and one on 5th August in different localities. They were also heard through the summer of 1943. There is one record of Coot (511) in 1941. Common Partridges (518) were heard from time to time. Pheasants (517) were present in small numbers. One Blackcock (*Lyrurus t. tetrrix*) was observed in Czechoslovakia in 1945. The Quail (520) was found in one district. First heard calling on 9th July, they were noted regularly in morning and evening. On 5th August in a cornfield one was flushed from a nest of eight eggs. These were heavily marked and of a greenish tint. The nest was made of thin corn-stalks and very shallow. The bird had the strong whirring flight of a typical game-bird.

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#### SUMMARY OF OBSERVATIONS.

From the above account it will be remarked that although the species seen were those which might be expected to occur in this type of country, there are certain species, particularly of insect-eating types, for whose absence it is difficult to account. As the Hedge-Sparrow and Wren are such sedentary birds, the severity of the winter may explain their absence. But in the case of partial migrants, such as thrushes and the Robin, this cannot account for their absence in summer, particularly as the Blackbird was found in numbers in Czechoslovakia in early March. It is very noticeable that insects swarm in the summer so as to constitute a pest.

The Black Redstart is the only representative of the chats save for a few on passage. The absence of owls is rather remarkable, unless the European species are less vociferous than those in Britain. Hawks are numerous, but why so few records of the Kestrel, since food is so abundant? Again difficulty in finding food in the winter, when the ground is often snow covered for three months, may explain this.

Finally a word on migration. Most of the dates coincide with those in England, although March migrants are unknown. Spring comes late here. There is a marked movement of birds passing through, although far away from large rivers or valleys. Thus in spring I have records of birds passing through, which apparently do not breed, and in Autumn many waders are seen.

To conclude, there is room for many more birds here, as insect life and small mammals abound. The grubs in the fields would feed many Lapwings, nor has the Stork population outstripped the supply of frogs. On the whole it is a disappointing area for birds.

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# The Survey of Bookham Common.

FOURTH YEAR.

## An Annotated List of the Rhynchophora of Bookham Common

By ALAN M. EASTON, M.B., B.S., F.R.E.S.

THE Sub-order Rhynchophora of the Coleoptera is well represented on the Bookham Commons, the following list containing the names of 202 species, no less than two-fifths of the total recorded species for the British Isles. Studied from the ecological aspect, the various species are, of course, distributed in association with their particular food-plants, the occurrence of which is again dependant on factors such as soil, altitude, etc. In this respect the Common is roughly divisible into four regions, viz.: (i) the plains, including many scattered bushes of hawthorn, blackthorn, etc.; (ii) the various ponds and waterways, with their characteristic flora; (iii) the wooded areas, usually on higher ground; and (iv) a small but important corner of the common to the north and east of Hundred Pound Bridge, where the soil is sandy. This last area furnishes many interesting beetles, which have not been recorded from elsewhere on the commons, *Strophosomus faber* Hbst., *Orobitis cyaneus* L., *Tychius flavicollis* Steph., and *Apion atomarium* Kirb. being noteworthy amongst them. In the woods, the weevils are well represented by such tree-loving species as the various *Rhynchites*, the brightly-coloured *Attelabus curculionoides* L., *Polydrosus flavipes* De G., and many others; but the timber-boring beetles are much scarcer as dead wood has not been allowed to remain as a breeding site for them. However, several genera of *Scolytidae* are represented, including *Eccoptogaster* Hbst., *Hylesinus* F., and *Ips* De G.

The methods of capture are the usual ones of beating, and sweeping, especially in the evenings; but another method, namely flood-sweeping, has been found extremely profitable by the author, who has the advantage of being a local resident. After cloudbursts much surface water collects on the plains, forming big pools, perhaps six or more inches in depth; or the streams may overflow, giving rise to large areas of inundation. By wading through these areas, using the sweeping net on the surface of the water, and especially on the projecting stems of plants, innumerable species of Coleoptera of all sorts are taken, including a goodly proportion of weevils.

In compiling the following list of Rhynchophora, an attempt has been made to indicate, by Roman figures, the months of capture of the various species; the mode of capture and usual habitat is given; and in certain instances, especially amongst the rarer or more local species, the area of the common where they occur is indicated either by name or by bracketed numerals corresponding with the grid references of

the Survey Base Map (*Lond. Nat.*, No. 24 (1945), opp. p. 34). It must be emphasised that these details refer solely to the personal experience of the author, except in the case of those species marked with an asterisk, or double asterisk, which he has not himself taken. The former (\*) are quoted, by kind permission, from "The Coleoptera of Bookham Common" by Mr F. J. Coulson, first published in the *Proceedings* of the South London Entomological and Natural History Society for 1941, and the latter (\*\*), recorded since the publication of the above paper, have been communicated personally to the author by Mr Coulson. This gentleman's very ready help in these respects is gratefully acknowledged. Indeed, it is entirely as a result of his encouragement that the present author, being armed with the powerful weapon of ready access, embarked upon his task of enumerating the Coleoptera of the Bookham Commons.

In concluding these introductory remarks, it is necessary to point out that the hunting ground covered comprises the whole National Trust property, viz., Bookham Common, Bank's Common, Fetcham Common, and certain roadside verges in Little Bookham as far as the "Windsor Castle." Wherever species have been taken solely outside the area of the Survey, this has been noted, but the the number of such species is small.

The author will be pleased to show his collection of Bookham Common beetles to members of the London Natural History Society by appointment.

### **Anthribidae.**

*Anthribus fasciatus* Forst. V. A single specimen by beating elm (482).

*A. variegatus* Fourc. V. One example by beating fir branches which overhang the edge of the common along the Mark Oak Path. The only conifer on the common, apart from yews, is a Scots pine to the south-east of the tunnel, and therefore outside the area of the Survey.

*Choragus sheppardi* Kirb. VI. One specimen by general sweeping (875).

### **Curculionidae.**

*Attelabus curculionoides* L. V, VI, VII. Not uncommon by beating oak; also lesser maple (519).

*Rhynchites aequatus* L. IV, V, VI. Common, by beating hawthorn and crab apple.

*R. aeneovirens* Marsh. III, IV, V, VI. Common, by beating hawthorn. Also on sallow and aspen. The blue variety, ab. *fragariae* Gy. also occurs, but rarely. It is very much commoner at Effingham.

*R. coeruleus* De G. IV. Not common. By beating hawthorn before it blossoms (664 and 37).

*R. germanicus* Hbst. III, V, VII. Not common. One on dwarf furze in March; one on *Cornus sanguinea* L. in May; and one by sweeping *Geranium pratense* L. (872).

*R. interpunctatus* Steph. III, IV, V. By beating hawthorn and hazel; common.

*R. nanus* Pk. V, VI, VII. Not uncommon, by beating birch. Also on hawthorn, sallow, and by sweeping grass.

*R. tomentosus* Gyll. VI, VII. Not uncommon, by beating aspen and sallow.

*R. longiceps* Th. VI, VII. Scarce and very local. By beating sallow on the north side of Lower East Pond.

*R. mannerheimi* Hum. VI. By beating birch; not common.

*R. betulae* L. IV, V. Not uncommon, by beating birch, hazel, and hornbeam.



- Apion cracca* L. IV, V, VI, VIII. Not uncommon. By sweeping *Chrysanthemum Leucanthemum* L., general sweeping, and on hawthorn.
- A. ulicis* Forst. I, II, III, IV, VII, IX, X, XI, XII. Common, on gorse, and dwarf furze.
- A. Genistae* Kirb. III, IV, V, VI, IX. Quite common, by beating or sweeping *Genista anglica* L.
- \**A. fuscirostre* F. One specimen taken by Mr F. J. Coulson, on *Genista anglica* L., on May 27, 1929.
- A. miniatum* Germ. V, VI, VII, VIII, IX, X. Common, especially on dock and by sweeping in the plains. Most abundant in July.
- A. cruentatum* Walt. VI. A single specimen by general sweeping in the Western Plain.
- A. viciae* Pk. VI, VII, VIII. Frequent, especially on *Vicia Cracca* L.
- A. difforme* Germ. VII, VIII. Not common. On *Trifolium repens* L., by evening sweeping, and flood-sweeping, and by beating oak.
- A. varipes* Germ. IV, VII. Not common. One by sweeping nettles (865) and one by beating oak.
- \**A. dissimile* Germ. Mr F. J. Coulson took one on Sept. 18, 1931.
- A. apricans* Hbst. IX. One specimen by sweeping *Vicia sepium* L. on Fetcham Common.
- A. assimile* Kirb. IV, V, VII, VIII. By sweeping *Trifolium repens* L., general sweeping, and by beating lesser maple.
- A. aestivum* Germ. V, VI, VII, VIII. Not uncommon. By general sweeping, and by beating oak and crab-apple.
- A. flavipes* Pk. IV, VII, VIII, IX. Common. Chiefly by sweeping *Trifolium repens* L., but also by general sweeping in the plains.
- A. nigritarse* Kirb. IV, VII, VIII. Not uncommon. By evening sweeping on elm, and blackberry.
- A. confluens* Kirb. IX. A single example by sweeping short grass (188).
- A. stolidum* Germ. V. Not common. By sweeping *Chrysanthemum Leucanthemum* L. This plant is abundant on that part of the common across the main road, opposite Bayfield bridge.
- A. hookeri* Kirb. V. One specimen by evening sweeping (485).
- A. radiolus* Marsh. VII. One on *Malva sylvestris* L. beside the road in Little Bookham. Also on hollyhocks in the garden of Manor Cottage, Isle of Wight.
- A. onopordi* Kirb. IV, V, VII, VIII, X. Not uncommon. On thistles, and by evening sweeping.
- A. carduorum* Kirb. VII. Not uncommon, by evening sweeping in damp localities, and by sweeping *Potentilla Anserina* L.
- A. atomarium* Kirb. VII. Three specimens beaten by hand off *Thymus Serpyllum* L. near Hundred Pound Bridge (188).
- A. virens* Hbst. VII. Somewhat common. By sweeping *Trifolium repens* L., evening sweeping, and flood-sweeping. Eight specimens taken by this last method (416).
- \**A. punctigerum* Pk. Mr F. J. Coulson took one on June 16, 1941.
- A. aethiops* Hbst. V, VII, VIII, X. Not uncommon. By evening sweeping, and on various Leguminosae, especially *Vicia Cracca* L.
- A. ebeninum* Kirb. V, VII, VIII, IX. By evening sweeping in damp situations, on *Vicia cracca* L., and on *Lotus corniculatus* L. Common.
- \**A. spencei* Kirb. Four specimens taken by Mr F. J. Coulson on May 29, 1929.
- A. ervi* Kirb. IV, V, VI, VII, VIII, IX. Common, on *Vicia Cracca* L., by evening sweeping, etc.
- \**A. platalea* Germ. Mr F. J. Coulson took one specimen on July 16, 1938.
- A. scutellare* Kirb. I, III, IV, V, VI, VII, IX, X. Never in large numbers, but usually to be taken, by beating *Ulex minor* Roth, in the stems of which its galls are to be found.
- A. loti* Kirb. V, VI, VII, VIII, IX, X. Very common, especially on *Lotus corniculatus* L., by evening sweeping, etc.
- A. semiculum* Kirb. IX, X, XII. Not common. One by sweeping, one on *Lathyrus pratensis* L., and one in hay refuse.

- \**A. tenue* Kirb. Taken by the late Mr S. R. Ashby.
- A. simile* Kirb. III, IV, V, VI, VIII, IX. Common. By beating birch, hazel, and holly, and by sweeping. One found hibernating in a squirrel's drey in a birch tree.
- \**A. pubescens* Kirb. Taken by Mr S. R. Ashby in July 1917. This species is not uncommon at Effingham.
- \**A. marchicum* Hbst. Specimens in the Ashby collection, taken by W. J. Ashdown, September 1916 and July 1917.
- A. affine* Kirk. V, VI, VII, VIII, IX, X, XI. This species, which is very similar to the above, is very common, and is to be taken in numbers by sweeping in the plains, especially near the streams.
- A. violaceum* Kirb. V, VI, VII, X. By evening sweeping, on dock, and on *Achillea millefolium* L. Common.
- A. hydrolapathi* Kirb. IV, V, VIII. By general sweeping, and on nettles and mint. Not uncommon.
- A. curtirostre* Germ. IV, V, VI, VII, VIII, XI. Very common, especially on *Rumex Acetosella* L., and by evening sweeping.
- Otiorrhynchus singularis* L. IV, V. Not common. By beating holly and *Cornus sanguinea* L.
- Caenopsis waltoni* Boh. III. Three specimens in moss (284).
- Strophosomus melanogrammus* Forst. I, II, III, IV, V, VI, VII, VIII, IX, X, XII. Very common. By beating various trees; extremely abundant in dead pine branches; amongst pea sticks; and in winter in squirrels' dreys and in moss.
- S. capitatus* De G. IV, V, VIII, IX. Local, but abundant on young birches (381). Also on hazel, and oak, and in frass in hollow oak.
- S. faber* Hbst. V, IX. On the ground, amongst roots; and by beating dwarf furze (188). Scarce and very local.
- Barypithes araneiformis* Schr. III, IV, V, VII. Not uncommon. Under leaves in pit, by shaking pea sticks, and by sweeping grass.
- B. pellucidus* Boh. VII. One specimen by evening sweeping beside Bookham Stream.
- Sciaphilus asperatus* Bons. IV, VII. Not common. By flood-sweeping and on gorse.
- Polydrosus flavipes* De G. IV, VI, VII. This beetle is often present abundantly, especially on oak (676 and 519).
- P. cervinus* L. IV, V, VI, VII. On white poplar, aspen, nettles, and wood-spurge (*Euphorbia amygdaloides* L.). Frequent.
- Phyllobius oblongus* L. V, VI. Common, by beating elm (482).
- P. urticae* De G. V. On nettles (879). Infrequent.
- P. pyri* L. IV, V, VI. On white poplar, and hawthorn. Common.
- P. argentatus* L. IV, V, VI. Not uncommon. By beating hawthorn, and aspen, and by sweeping grass.
- P. maculicornis* Germ. V, VI. Not uncommon. By beating white poplar and elm.
- P. parvulus* Ol. V, VI, VII. Common. By beating hawthorn, and on *Geranium pratense* L.
- Tanymecus palliatus* F. VI. One specimen by sweeping watercress in Bookham Stream (482).
- Atactogenus exaratus* Marsh. VI. Three specimens by beating bracken, Fetcham Common.
- \**Barynotus obscurus* F. Mr F. J. Coulson took one by sweeping, June 23, 1941.
- Sitona cambricus* Steph. I. One specimen in moss in January.
- \**S. regensteiniensis* Hbst. Taken by Mr F. J. Coulson on needle whin and gorse, June 23 and 29, 1929.
- \*\**S. crinitus* Hbst. One on hawthorn, June 1, 1942 (Mr F. J. Coulson).
- S. tibialis* Hbst. III, IV, V, VI, VII, IX, X, XI. Very common on gorse and dwarf furze.
- S. hispidulus* F. IV, VII, VIII, X. Not uncommon. On clover, and *Lathyrus pratensis* L. Nine specimens by flood-sweeping beside Bank's Stream.



- S. humeralis* Steph. V, IX. By sweeping *Scabiosa Succisa* L. and general sweeping. Not common.
- S. flavescens* Marsh. VII, VIII, IX. Not uncommon, by flood-sweeping, evening sweeping; on *Carduus lanceolatus* L., etc.
- S. suturalis* Steph. VII, X. On *Vicia Cracca* L., by general sweeping, and by flood-sweeping. Not uncommon.
- S. lineatus* L. IV, V, VI, VII, VIII, IX, X. Common. On *Vicia Cracca* L. and *Lathyrus pratensis* L., by flood-sweeping, on sallow, etc.
- S. sulcifrons* Thunb. V, IX. One by sweeping *Vicia sepium* L., and one by sieving bonfire refuse.
- Phytonomus rumicis* L. IV. A single specimen by beating hawthorn.
- P. adpersus* F. IV, V, VII, VIII. Not common. On dock, and elm, and by sweeping Umbelliferae in a ditch, and on *Stachys palustris* L.
- P. arator* L. VI. Two specimens by sweeping *Lychnis Flos-cuculi* L. (595).
- P. variabilis* Hbst. IX. One specimen by sweeping *Scabiosa Succisa* L. (832).
- \**P. murinus* F. Mr F. J. Coulson beat one from sallow by the ponds, April 22, 1939.
- \**P. venustus* F. (*trilineatus* Marsh).
- P. nigrirostris* F. VII, VIII, X. By flood-sweeping, and general sweeping. Not common.
- Liosoma deflexum* Pz. VII. Not common. By evening sweeping near the streams, and on *Polygonum Hydropiper* L.
- \**L. oblongulum* Boh. Mr F. J. Coulson took one by sweeping, May 2, 1940.
- \*\**L. pyrenaicum* Bris., var. *trogodytes* Rye. Mr F. J. Coulson swept one, July 7, 1941.
- Orchestes quercus* L. III, IV, V, VI, VII, VIII, XII. By beating oak, hawthorn, hazel, and blackberry; in rotten wood in December. Not uncommon.
- O. alni* L. V, VI, VII. Very common on elm; also by sweeping. The variety *ferrugineus* Marsh. occurs rarely.
- O. pilosus* F. VII. One on *Prunus spinosa* L. (439); another on oak, Fetcham Common.
- O. avellanae* Donis. III, IV, V, VII, VIII, IX. Not uncommon. By beating oak, aspen and hawthorn, and by sweeping.
- O. fagi* L. VII. This common beetle has been encountered only once, by beating crab-apple. It has not been taken on beech.
- O. rusci* Hbst. IV, V, VIII. By beating birch, not uncommon.
- O. stigma* Germ V. One specimen on sallow (565).
- O. salicis* L. III, IV, V, VI, VII, IX. Common, on sallow, white poplar, and *Cornus sanguinea* L.
- Rhamphus pulicarius* Hbst. V, VI, VII, IX. By sweeping grass and reeds. Not uncommon.
- Pseudostyphlus pilumnus* Gyll. VI. One specimen by sweeping *Matricaria* (869). This beetle is not uncommon at Fetcham.
- Notaris scirpi* F. IX. One at roots of *Sparganium erectum* L., Isle of Wight Pond.
- N. acridulus* L. I, IV, VII, IX. Not uncommon, by sweeping *Equisetum*. Two in a moorhen's nest, Lower East Pond.
- \**Erirrhinus festucae* Hbst. Taken by Mr F. J. Coulson in June.
- E. nereis* Pk. I, IV, V, VI, VII, X. Common. Hibernating in stems of *Typha latifolia* L. (Isle of Wight Pond), in flood refuse from Isle of Wight Pond, by sweeping *Equisetum*, and generally, around the ponds.
- E. scirrhosus* Gyll. V, IX. By sweeping *Equisetum*, and at roots of *Sparganium erectum* L. Not common.
- Dorytomus tortrix* L. V, VI. By beating aspen. Local, but abundant in South East Wood (866) in May.
- D. taeniatus* F. I, IV, V, VI. Common, on sallow. Abundant in moss in winter.
- D. dejeani* Faust. V, VI. Common on aspen and sallow.
- D. melanophthalmus* Pk. VI. By beating sallow, Fetcham Common.
- D. rufulus* Bed. V, VI. Not common. By beating sallow and birch.
- Tanysphyrus lemnae* F. VI, VIII. By sweeping *Equisetum*, and abundant in a moorhen's nest.
- Bagous limosus* Gyll. IV. Two in flood refuse from Isle of Wight Pond.

- \**B. lutulosus* Gyll. Taken at pond edge by Mr F. J. Coulson, May 27, 1929.
- \**B. glabrirostris* Hbst. Taken by Mr S. R. Ashby, July 1915, and one by Mr F. J. Coulson, June 9, 1934.
- B. collignensis* Hbst. (= *claudicans* Boh.). IV. One example in flood refuse from the Isle of Wight Pond.
- B. lutulentus* Gyll. (= *nigritarsis* Th.). I, IV, V, X. Not uncommon. By sweeping *Equisetum*, Lower East Pond; in flood refuse from Isle of Wight Pond, and abundant in a moorhen's (?) nest amongst the *Equisetum* of Lower East Pond.
- \*\**B. puncticollis* Boh.
- Anoplus plantaris* Naez. IV, V, VI, VIII, IX. Common by beating birch and by sweeping.
- Tychius flavicollis* Steph. VII. One example taken amongst the roots of *Lotus corniculatus* L. (188).
- T. pusillus* Germ. IX. One by sweeping short grass in the same area as the last species (188). This rare beetle is taken by evening sweeping at Effingham.
- T. picirostris* F. V, VI, VII, IX. Common. By general sweeping, on *Trifolium repens* L., *Lotus corniculatus* L., and on hawthorn.
- \**Sibinia potentillae* Germ. Mr F. J. Coulson swept one, June 30, 1930.
- Miarus campanulae* L. VII. One secured by sweeping *Campanula rotundifolia* L. (188).
- \**Gymnetron veronicae* Germ., var. *nigrum* Eva. Taken and exhibited by the late Mr S. R. Ashby. Mr F. J. Coulson took one, May 23, 1930.
- G. beccabungae* L. (*squamicolle* Reitt.). IV. One specimen by beating willow, beside the Lower East Pond.
- G. melanarium* Germ. X. One specimen by sweeping (875).
- G. pascuorum* Gyll. V, VI. Common. By sweeping grass, and especially on *Plantago lanceolata* L.
- Anthonomus inversus* Bed. V, VI, VII. Common on the elms on the edge of the Common opposite Bank's Pond. Also on holly, hawthorn, and *Sisymbrium officinale* Scop.
- A. pedicularius* L. III, IV, V, VII. Common, by beating hawthorn.
- \**A. chevrolati* Desbr. *Entomologist's Record*, 33, 1921., "common on up side of railway beyond the bridge," April 1920.
- \**A. pubescens* Pk. *Entomologist's Record*, 33, 1921, "beat furze and trees over the area of the common which lies beyond the railway bridge on the up side of the railway."
- A. pomorum* L. VI. Most crab-apple trees seem free of this beetle, but one (615) was found heavily infested. One example by sweeping *Lychnis Flos-cuculi* L. (812).
- A. rubi* Hbst. IV, V, VI, VII, VIII, IX. Common, by evening sweeping, on dog-rose, hazel, beech, *Scabiosa Succisa* L., etc.
- Nanophyes gracilis* Redt. II, III, VI. One specimen by beating gorse in February, and another in March. Somewhat numerous on the clay amongst the stems of *Peplis Portula* L. (684).
- Cionus hortulanus* Geof. VII, VIII. One on *Scrophularia aquatica* L. (446), and one by beating aspen.
- C. alauda* Hbst. V, VII. Not uncommon on *Scrophularia aquatica* L. Bank's Stream, and Bookham Stream.
- C. pulchellus* Hbst. VII. In similar situation and numbers to the above species.
- Orobitis cyaneus* L. V, VII. Taken in small numbers by searching amongst the roots of *Viola canina* L. (188).
- Acalles ptinoides* Marsh. XI. One in moss on an oak-stump, Hill House Wood.
- A. turbatus* Boh. VI. One specimen by beating holly, Hill House Wood.
- Coeliodes rubicundus* Hbst. IV, V, VIII, IX. Not uncommon. Chiefly on birch, but also on hazel, willow, and a dead oak-branch.
- C. dryados* Gmel. III, IV, V, VII. By beating hawthorn, birch and dead holly, also by sweeping grass under an oak tree, dock, and *Mercurialis perennis* L. Not uncommon.



- C. ruber* Marsh. IV, V, VI, VII. Not common. By beating hawthorn, and dead holly, and by sweeping grass under oaks.
- C. erythroleucus* Gmel. IV, VI. Not common. By beating hawthorn, and aspen.
- \**Stenocarus fuliginosus* Marsh. Mr F. J. Coulson swept one, June 16, 1941.
- Cidnorrhinus quadrimaculatus* L. III, IV, V, VI, VII, IX, X. Very common, on nettles.
- Poophagus sisymbrii* F. V, VII. Not very common. By sweeping watercress (419, 482).
- Ceuthorrhynchus assimilis* Pk. IV, V, VI, VII. By sweeping *Cardamine hirsuta* L., *Alliaria officinalis* Andr., and *Sisymbrium officinale* Scop.
- C. constrictus* Marsh. IV, V. Not uncommon, on *Alliaria officinalis* Andr. (769).
- C. cochleariae* Gyll. IV. Abundant, by sweeping *Cardamine pratensis* L. on the Western Plain. Also on *Cardamine hirsuta* L. and *Alliaria officinalis* Andr.
- C. erysimi* F. III, VI, VII. Not uncommon. By sweeping, and on watercress. One in moss in March
- C. contractus* Marsh. III, IV, V, VI, VII. Common. Chiefly by sweeping *Cardamine hirsuta* L. Also on *Nasturtium officinale* Br. and on *Alliaria officinalis* Andr. One on cherry-blossom.
- C. quadridens* Panz. IV, V, VI. By sweeping low bog-plants, and watercress, and by beating willow. Not uncommon.
- C. pollinarius* Forst. IV, V, VI, VII, X. Common, on nettles, and by sweeping.
- C. pleurostigma* Marsh. IV, V, VI. By sweeping grass under trees, on watercress, and hawthorn. Not common.
- C. alliariae* Bris. IV, V. Not uncommon, on *Alliaria officinalis* Andr. in company with *C. constrictus* Marsh. (769).
- C. rapae* Gyll. VI. Three specimens taken on *Sisymbrium officinale* Scop. near the "Windsor Castle."
- C. rugulosus* Hbst. VI, VII. By sweeping *Matricaria* (869 and 422). Not common.
- C. melanostictus* Marsh. V, VII, VIII, X. By sweeping *Mentha*, not uncommon.
- C. asperifoliarum* Gyll. V, VII. By beating *Symphytum officinale* L. (571) and on *Mentha*. Not common.
- C. chrysanthemi* Germ. V. By sweeping *Chrysanthemum Leucanthemum* L. on the part of the Common across the road, opposite Bayfield Bridge.
- C. litura* F. VII, VIII. Common, by evening sweeping, and flood-sweeping.
- C. trimaculatus* F. X. One on thistles, Fetcham Common.
- C. floralis* Pk. IV, V, VI, VII. By sweeping *Nasturtium officinale* Br., *Capsella Bursa-pastoris* Medik., and other Cruciferae. Common.
- C. melanarius* Steph. V, VI, VII. Not uncommon, by sweeping *Nasturtium officinale* Br. and *Nasturtium palustre* DC.
- C. nasturtii* Germ. VI. One specimen by sweeping watercress (482). This fine beetle is common on the watercress beds at Fetcham.
- Ceuthorrhynchidius troglodytes* F. VII. Not uncommon, on *Plantago lanceolata* L.
- C. barnevillei* Gren. X. One specimen by general sweeping (73).
- Amalus haemorrhous* Hbst. VII. One specimen by sweeping long grass under an oak (273).
- Rhinoncus pericarpus* L. V, VII, X. Common, by sweeping dock, and by general sweeping, especially in July.
- R. castor* F. IV, V. Not uncommon. Generally by sweeping, but also beaten from beech and elm.
- R. bruchoides* Hbst. VII. One specimen by evening sweeping (829).
- Phytobius leucogaster* Marsh. IV. One specimen in flood refuse from the Isle of Wight Pond.
- P. waltoni* Boh. VII, VIII. Not uncommon, by sweeping *Polygonum Hydro-piper* L.
- P. canaliculatus* Fähr. IV. One specimen in flood refuse from the Isle of Wight Pond. (Mr F. J. Coulson took this species abundantly in the ditch below the Isle of Wight Pond, June 16, 1941.)
- Balaninus venosus* Gr. V, VII. By beating oak and hazel. Infrequent.

- \**B. nucum* L. Three specimens from hazel near Mark Oak, by Mr F. J. Coulson, July 7, 1941.
- B. glandium* Marsh. IV, V, VI, VII, VIII. Not uncommon, on oak, hawthorn, and hazel.
- \**B. villosus* F. One from oak, June 4, 1934, Mr F. J. Coulson.
- Balanobius salicivorus* Pk. III, V, VI, VII. Common, by beating sallow, and by sweeping adjacent herbage.
- B. pyrrhoceras* Marsh. IV, V, VI, VII. Common, by beating oak and hawthorn. Also by sweeping grass, dock, and *Mercurialis perennis* L.
- Rhyncolus lignarius* Marsh. VIII. In a large hollow ash-tree (277) the remains of innumerable beetles of this species are to be found. It was some time before living specimens were at last located in an ash-log, some distance from the main trunk.
- R. truncorum* Germ. VIII. Taken in company with the above and in the same profusion.
- Magdalis armigera* Geof. V, VI, VII. Very common, by beating elm (482, etc.).
- M. cerasi* L. V, VII. By beating hawthorn. Not common.
- M. ruficornis* L. V, VII. By beating hawthorn. Not common.
- \**M. barbicornis* Lat. In the collection of the late Mr S. R. Ashby. This species occurs on Box Hill.

### Scolytidae.

- Eccoptogaster scolytus* F. (*destructor* Ol.). IV. The larvae are numerous under the bark of fallen elm-branches, and the adult beetles are readily reared from them.
- \**E. mali* Bech. Taken by Mr W. J. Ashdown, July 1916.
- E. intricatus* Ratz. V, VII. Bred in large numbers from fallen oak branches; by beating felled oak-branches, and one off ash.
- E. rugulosus* Ratz. VII. One, by beating plum (576). Several plums have escaped from the gardens of the Isle of Wight and are growing semi-wild.
- E. multistriatus* Marsh. IV, VII. Emerged in April in considerable numbers from elm branches, together with *E. scolytus* F. One by beating elm in July.
- \**Hylastinus obscurus* Marsh. Mr F. J. Coulson swept one specimen near a gorse bush at Mark Oak, June 23, 1941.
- \**Hylesinus crenatus* F. Six specimens taken by Mr F. J. Coulson under bark of damp fallen ash trunk, June 30, 1941.
- H. oleiperda* F. V, VII. Not common. By beating ash (198 and 872).
- \**H. fraxini* Pz. One specimen taken on the wing near the Isle of Wight by the late Mr R. W. Attwood, April 21, 1940.
- Ips Laricis* F. VI. One specimen by sweeping grass under trees (869).
- \*\**Xyloterus domesticus* L.
- \**Xyleborus dispar* F. Taken by Dr K. G. Blair in burrows in young oaks killed by fire, May 17, 1930; and in young birch stems, about  $\frac{5}{8}$ " diameter, on June 25, 1930.

### Plant Galls of Bookham Common.

By H. J. BURKILL, M.A., F.R.G.S.

This list has been compiled from my note books of the last nineteen years but it cannot by any means be regarded as exhaustive, and anyone working on the area should be able to add many more species to those I have noted. The whole of the ground has not been systematically examined each year, and so some species with a short existence may have escaped detection. Most attention has been given to the Oak galls, as observation was concentrated on trying to link up the alter-



nate forms of the species of Cynipidae that attack the Oaks, and material was gathered which gave some good results.

For many of the species only a few records were made—their occurrence was just noted and little attention was paid to scarcity or abundance. Some years they were seen and some years they were absent. Not until ecoclimatic conditions have been more fully investigated can any explanations be made.

The names of the host plants are based on the *London Catalogue of British Plants*, 11th edition, and those of the causers are mainly taken from Dr Houard's work *Les Zoocécidies des Plantes d'Europe* (1908, 1909, and 1913). The figures after the causer's name indicate the squares on the Survey map in which the specimens were found.

- Ranunculus acris* L.—*Perrisia ranunculi* Bremi. 73. 91.  
*Barbarea vulgaris* R. Br.—*Dasyneura sisymbrii* Schranck. 67.  
*Cardamine pratensis* L.—*Ceuthorrhynchus pectoralis* Schult. 81. Plentiful in 1933, but not noticed lately.  
*Viola silvestris* Lam.—*Perrisia affinis* Kieff. 27. 53.  
*V. Riviniana* Reich.—*Urocystis violae* Sow. 83.  
*Stellaria media* Vill.—(1) *Eriophyes atrichus* Nal. Frequent. (2) Eelworms found in stem of a distorted plant.  
*S. graminea* L.—(1) *Brachycolus stellariae* Hardy. (2) *E. atrichus* Nal. Abundant in 1942 and 1945.  
*S. Holostea* L.—*B. stellariae* Hardy. Generally well distributed.  
*S. uliginosa* Murr.—*E. atrichus* Nal. 46. 49. 58.  
*Ilex Aquifolium* L.—Swollen buds. Petals pinkish. No causer found. 58.  
*Acer Pseudo-platanus* L.—(1) *Eriophyes macrorrhynchus* Nal. (2) *E. macrochelus* Nal. var. *erinea* Trot.  
*A. campestre* L.—(1) *Atrichosema aceris* Kieff. 27. 42. (2) *Contarinia acerplians* Kieff. (3) *E. macrorrhynchus* Nal. (4) *E. macrochelus* Nal. var. *erinea* Trot.  
*Aesculus Hippocastanum* L.—*E. hippocastani* Fockeu.  
*Ulex minor* Rott.—*Apion scutellare* Kirby. 18. 57. 81.  
*Trifolium repens* L.—*Perrisia trifolii* F. Loew. 73. 91.  
*Lotus uliginosus* Schkuhr.—*P. loticola* Rubs. 67.  
*Vicia tetrasperma* Moench.—(1) *Perrisia viciae* Kieff. (2) *Contarinia cracca* Kieff. 84. (3) Leaflets rolled, *Eriophyes plicator* var. *trifolii* Nal. With these was associated another species of *Eriophyes*.  
*Lathyrus pratensis* L.—*P. lathyricola* Rubs. 89.  
*Prunus spinosa* L.—(1) *Aphis* galls plentiful, but the species have not been determined. (2) *Eriophyes similis* Nal. Frequent.  
*P. domestica* L.—*E. similis* Nal. 57.  
*Spiraea Ulmaria* L.—(1) *Perrisia ulmariae* Bremi. 67. 45. 48. (2) *P. pustulans* Rubs. 67.  
*Rubus rusticanus* Merc.—*Eriophyes gibbosus* Nal.  
*R. fruticosus* L.—(1) *E. gibbosus* Nal. (2) *Perrisia plicatrix* H. Loew. (3) *Lasiop-tera rubi* Heeger. 58.  
*Potentilla erecta* Hampe.—*Xestophanes brevitarsis* Thoms. Generally distributed. Plentiful in 1944 and 1945.  
*Rosa arvensis* Huds.—(1) *Rhodites rosae* L. 86. (2) *R. eglanteriae* Htg. 86.  
*R. canina* L.—(1) *R. rosae* L. Common. (2) *R. eglanteriae* Htg. Frequent some years. (3) *Blennocampa pusilla* Klug. 86. (4) *Perrisia rosarum* Hardy. 57. 82. 85.  
*R. dumetorum* Thuill.—*R. rosae* L. 86.  
*R. mollis* Sm.—(1) *R. rosae* L. 86. (2) *R. eglanteriae* Htg. 86.  
*Pyrus Malus* L.—*Eriophyes* sp. rolling up the margins of the leaves. 67. I have found this in Shropshire, and have had specimens sent to me from Witley, Surrey, and from Northampton.

- Sorbus Aucuparia* L.—(1) Flower buds swollen. Apparently Houard 2907, due to a Cecidomyid. (2) *Eriophyes pyri* Pagnst.
- Crataegus monogyna* Jacq.—(1) *Aphis crataegi* Buckton. Frequent. (2) *Perrisia crataegi* Winn. 58. (3) Flower buds swollen, remaining closed, containing pink larvae of a Cecidomyid sp. (4) Similar buds with yellow larvae of a Cecidomyid sp. (5) *Eriophyes crataegi* Can. (6) *E. goniothorax* Nal.
- Epilobium angustifolium* L.—*Perrisia epilobii* F. Loew.
- Bryonia dioica* Jacq.—*Perrisia bryoniae* Bouche. 66.
- Pimpinella Saxifraga* L.—*Lasioptera carophila* F. Loew. 73.
- Silaus flavescens* Bernh.—(1) *L. carophila* F. Loew. 73. (2) *Kiefferia pimpinellae* F. Loew. 73. (3) Cecidomyid galling the stem. 57. (4) *Perrisia dittrichi* Rubs. 73.
- Heracleum Sphondylium* L.—*Macrolabis corrugans* F. Loew. 73.
- Sambucus nigra* L.—(1) Swollen flower buds, green, but as the larvae had gone the species could not be determined, Cecidomyid. 39. (2) *Epitrimerus trilobus* Nal. Frequent most years.
- S. nigra* L. var. *laciniata* Mill.—(1) Margins of leaves rolled up by *E. trilobus* Nal. (2) Leaflets folded upwards by Cecidomyid larvae in late summer. 86.
- Lonicera Periclymenum* L.—(1) *Eriophyes xylostei* Can. Has been known for some years in two places in area 83. The gall was very abundant on a big bush on Bank's Common in 1943, but not so plentiful the last two summers. (2) *Siphocoryne xylostei* Schrank. Frequent most years.
- Galium saxatile* L.—*Eriophyes galii* Karp.
- G. palustre* L.—*Perrisia hygrophila* Mik. 58.
- G. uliginosum* L.—(1) *P. galii* H. Loew. Generally plentiful on all the low-lying areas to the west. (2) Bud galls, not hairy, due to a Cecidomyid. Houard 5369. 58. (3) Bud galls, not opening, *Eriophyes* sp. Houard 5270. 58. (4) Terminal parts of plants and flowers intensely proliferated and metamorphosed, viridescent, containing enormous numbers of *Eriophyes galii* Karp. Very abundant, 1945.
- G. Aparine* L.—*E. galii* Karp. Frequent.
- Achillea Ptarmica* L.—(1) *Rhopalomyia ptarmicae* Vallot. 49. 73, etc. (2) Buds swollen and distorted. *Eriophyes* sp. (3) Leaf margins rolled upwards. *Eriophyes* sp. (4) Flower heads distorted, containing pupae of a Cecidomyid, white with a red blotch. 85.
- Senecio erucifolius* L.—*Tephritis marginata* Fallen. 85.
- Cnicus lanceolatus* Willd.—*Euribia stylata* Fabr. Western areas.
- C. arvensis* Hoffm.—*E. cardui* L. Common.
- Centaurea pratensis* Thuill.—*E. jaceana* Her. 73. 81. 83.
- Hieracium umbellatum* (L.) Zahn.—*Noeeta pupillata* Fallen.
- Sonchus asper* Hill.—*Cystiphora sonchi* F. Loew. 67.
- Fraxinus excelsior* L.—(1) *Perrisia fraxini* Kieff. Frequent. (2) *Dasyneura fraxinea* Kieff. Frequent.
- Solanum Dulcamara* L.—*Contarinia solani* Rubs. 67.
- Veronica Chamaedrys* L.—*Perrisia veronicae* Vallot. General.
- V. scutellata* L.—*P. similis* F. Loew. 58.
- V. scutellata* var. *villosa* Schum.—*P. similis* F. Loew. 58.
- Nepeta hederacea* Trev.—(1) *Liposthenes latreillei* Kieff. 56. 83. (2) *Oligotrophus bursarius* Bremi. Frequent.
- Urtica dioica* L.—(1) *Perrisia urticae* Perris. (2) *Triosa urticae* L.
- Ulmus campestris* L.—(1) *Eriophyes ulmi* Nal. (2) *E. filiformis* Nal. (3) *Eriophyes* sp. among white hairs on the under surface of the leaves. Houard 2045.
- Betula pubescens* Ehrh.—(1) *Contarinia betulicola* Kieff. 53. (2) *Epiblema tetraquatrana* Haw. 62. (3) *Eriophyes rudis* Can.
- Corylus Avellana* L.—(1) *Stictodiplosis corylina* F. Loew. Common. (2) *Eriophyes avellanae* Nal.
- Quercus Robur* L.—A. Species of Cynipidae with Alternating Generations.



## Sexual Generation.

## Agamous Generation.

- Andricus cirratus* Adler. Once. 73. Form *callidoma* Gir. Occasionally.  
*A. curvator* Htg. Frequent some years. Form *collaris* Htg. Scarce.  
*A. gemmatus* Adler. Once. 68. Form *corticis* Htg. Plentiful.  
*A. inflator* Htg. Scattered about. Form *globuli* Htg. Occasionally.  
*A. trilineatus* Htg. A few. 67. 68. Form *radicis* Fabr. At times. 35. 67. 68.  
*A. nudus* Adler. Once. 67. Form *malpighi* Adler. 67.  
*A. pilosus* Adler. Once. 67. Form *fecundator* Htg. Frequent.  
*A. testaceipes* Htg. A few. 59. 67. Form *sieboldi* Htg. Occasionally.  
*A. xanthopsis* Schl. 68. (Form *glandulae* Schrank. Not seen.)  
*A. ramuli* L. Once. 73. (Form *autumnalis* Htg. Not seen.)  
*A. occultus* Tschek. A few. 91. Form *solitarius* Fonsc. Scattered.  
*A. furunculus* Bjck. Frequent some years. Form *ostreus* Gir. Scattered about.  
*Biorrhiza pallida* Oliv. Usually common. Form *aptera* Bosc. Once. 76.  
*Trigonaspis megaptera* Panzer. Plentiful some years. Form *renum* Gir. 76.  
*Neuroterus albipes* Schenck. Scattered. Form *laeviusculus* Schenck. Usually common.  
*N. baccarum* L. Frequent. Form *lenticularis* Oliv. Plentiful.  
*N. tricolor* Htg. Only occasionally. Form *fumipennis* Htg. Most years.  
*N. vesicator* Schl. Generally seen. Form *numismalis* Oliv. Abundant.  
*N. aprilinus* Gir. Usually plentiful. *N. schlechtendali* Mayer. Found 1943, but until further evidence is obtained I prefer not to link this with *N. aprilinus*.  
*Diptolepis verrucosa* Schenck. Not seen. Form *divisa* Htg. 58. 59. 76.  
*D. similis* Adler. Some years plentiful. Form *longiventris* Htg. Scattered.  
*D. taschenbergi* Schl. As last. Form *folii* L. Often abundant.

## B. Species of Cynipidae with no Alternating Generations.

- Andricus quadrilineatus* Htg. Fairly plentiful some years.  
*A. albopunctatus* Schl. Scattered about.  
*A. seminationis* Adler. Occasionally.  
*Cynips kollari* Htg. Generally distributed.

## C. Species other than Cynipidae.

- Heliozela stanneella* Fisch, v. R. At times.  
*Macrodiplosis volvens* Kieff. Scattered about.  
*M. dryobia* F. Loew. As last.  
*Quercus cerris* L.—(1) *Callirhytis glandium* Gir. 27. (2) *Andricus circulans* Mayr. 27.  
*Salix fragilis* L.—(1) *Pontania proxima* Lepel. (2) *Euura ater* Jurine. (3) *Perrisia terminalis* H. Loew. (4) *Eriophyes* sp. Long roll on the margin of the leaf.  
*S. caprea* L.—(1) *Pontania bridgmani* Cam. (2) *Euura saliceti* Fallen. (3) *E. venustus* Zadd. (4) *Saperda populnea* L. (5) *Melanagromyza simplicoides* Hendel. (6) *Rhabdophaga pierrei* Kieff. (7) *R. rosaria* H. Loew. (8) *R. salicis* Schrank. (9) *Iteomyia capreae minor* Kieff. (10) *Rhabdophaga pseudococcus* Thomas.  
*S. atro-cinerea* Brot.—(1) *Saperda populnea* L. (2) Coleopterous larva differing from the last. (3) *Grapholitha servilleana* Dup. (4) *Sesia formicaeformis* Esp. (5) *S. flaviventris* Staudgr. (6) *Euura ater* Jurine. (7) *Pontania bridgmani* Cam. (8) *Euura saliceti* Fallen. (9) Saw-fly larvae rolling leaf margins. (10) *Agromyza schineri* Gir. (11) *Melanagromyza simplicoides* Hendel. (12) *Perrisia marginem torquens*. (13) *P. terminalis* H. Loew. (14) *Rhabdophaga albipennis* Winn. (15) *R. nervorum* Kieff. (16) *R. dubia* Kieff. (17) *R. saliciperda* Dufour. (18) *R. salicis* Schrank. (19) *R. nielsenii* Kieff. (20) *R. rosaria* H. Loew. (21) *Iteomyia capreae major* Kieff. (22) *I. capreae* Winn. (23) *Rhabdophaga pseudococcus* Thomas. (24) *Eriophyes tetanothrix* Nal.

*Populus canescens* Sm.—*Gypsonoma aceriana* Dup.

*P. tremula* L.—(1) *Saperda populnea* L. (2) *Agromyza schineri* Gir. (3) *Melanagromyza simplicoides* Hendel. (4) *Harmandia petioti* Kieff. (5) *H. globuli* Rubs. (6) *H. tremulae* Winn. (7) *H. cavernosa* Rubs. (8) *Lasioptera populnea* Wachtl. (9) *Phyllocoptes populi* Nal. (10) *Eriophyes varius* Nal. (11) *Taphrina aurea* Fries.

*P. pyramidalis* Rozier.—(1) *Pemphigus bursarius* L. (2) *P. marsupialis* Courcelet. (3) *P. affinis* Kalt. These three species occur on trees in the hedge bounding the common by Bayfield.

*Juncus conglomeratus* L.—*Livia juncorum* Latr.

*J. articulatus* L.—*L. juncorum* Latr.

*Carex vulpina* L.—*Perrisia muricatae* Meade.

*C. hirta* L.—Cecidomyid. Houard 390.

*Molinia caerulea* Moench.—*Oligotrophus ventricolus* Rubs. used to be plentiful in 73, 81, 82, and 83, but the last few years has been hard to find, possibly burnt out by grass fires, but the galls of *Xestophanes brevitarsis* in the same areas have increased in numbers.

*Brachypodium sylvaticum* Roem. & Schult.—(1) *Chlorops cingulata* Meig. in some numbers in the winter of 1934-44 in areas 58 and 68, but very scarce in December 1944 and not found at all last year. (2) *Poomyia helwigi* Rubs. Occasionally.

*Agropyron repens* Beauv.—*Isosoma graminicola* Gir. 57.

*Pteris aquilina* L.—*Anthomyia signata* Brischke. Occasionally. (2) *Perrisia filicina* Kieff. In several areas.

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## Addresses of Recorders.

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THE following sectional recorders will be glad to receive records relating to the London Area (20 miles round St Paul's) from members and others:

**Mammals, Reptiles and Amphibia:** R. S. R. Fitter, 39 South Grove House, N.6.

**Birds:** *North of the Thames*, E. R. Parrinder, 27 Gwalior House, Chase Road, N.14; *South of the Thames*, C. B. Ashby, 20 Denmark Road, Carshalton, Surrey.

**Insects:** P. W. E. Currie, 102 Burdon Lane, Belmont, Sutton, Surrey (see also p. 89).

**Plant Galls:** H. J. Burkill, 3 Newman's Court, Cornhill, E.C.3.

**Botany:** J. E. Lousley, 7 Penistone Road, S.W.16.



# The Epping Forest Survey.

## FOURTH YEAR.

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### Progress Report.

By the Survey Committee of the Chingford Branch.

**I**T is to be regretted that the change from war to peace in 1945 has caused more distraction from Natural History work than the events of the war itself. Comparatively little has been achieved in the way of detailed general survey work, although a start has been made on the Ludgate Plain area (as proposed last year), for which a preliminary ecological map has been prepared. Copies of this, together with a memorandum giving some general notes on the area, can be purchased from the Survey Secretary. Owing to restrictions on space in the *London Naturalist* it cannot be published this year.

The Committee has invited Mr J. Ross to prepare reports on his researches into the Mycetozoa and Plant Galls of Epping Forest, and are pleased to be able to publish the former this year. The continued co-operation of Miss M. L. Mathieson and Mr H. Hawkins in providing climatic data is also gratefully acknowledged, and Mr Hawkin's annual report is published below.

The Committee feel it is desirable now, after four years' experience of the Epping Forest Survey, to make a statement of its policy, as follows:—The Epping Forest Survey is intended to consist of two main parts, (a) the preparation of detailed comprehensive ecological surveys of small areas which are either interesting in themselves or typical of a large area of the forest, and (b) the preparation of special surveys or reports on one aspect only of the ecology of the forest as a whole. The Cuckoo Pits and Ludgate Plain surveys fall into the first class; the reports of Mr Ross's researches into Mycetozoa and Plant Galls are examples of the second. In this way it is hoped that the ecology of Epping Forest will be recorded and understood as effectively as possible.

There is every sign that members will settle down once more to work in the Forest in 1946, and it is hoped the Survey will make a real contribution to scientific knowledge.

D. G. TUCKER, *Secretary.*

## Mycetozoa in Epping Forest.

By J. Ross.

At one time Mycetozoa were classed as Fungi, and even now they are sometimes referred to as Myxomycetes, Myxogastres or Slime-fungi; probably they should be considered as belonging to the Protozoa. They are mostly found in the spore-bearing stage, and then are fragile and fugitive organisms if well matured. The spores are readily dispersed by air currents, and being small and light may be carried great distances; hence some species are almost world-wide in their occurrence, but others seem to require special conditions, and are rare, or restricted as to locality and habitat.

Those who search for Mycetozoa in Epping Forest and its near neighbourhood are fortunate in that this district for many years was the hunting ground of the late Mr Arthur Lister, F.R.S., F.L.S., and his daughter, Miss Gulielma Lister, F.L.S., who produced the "Monograph of the Mycetozoa," a work that has passed through three editions. I must acknowledge the paramount value of the "Monograph" with its carefully compiled descriptions and references and its admirable plates, coloured and otherwise. For over thirty years Miss Lister has given me encouragement and generous help in field work and in the identification of species. As President of the Essex Field Club in March 1917, Miss Lister delivered an address entitled "A Short History of the Study of Mycetozoa in Britain, with a List of Species Recorded from Essex"; the species listed were collected almost entirely in the Epping Forest district, inclusive of Wanstead Park, with a few from "a garden in Leytonstone," where there were logs of Scots pine.

In Miss Lister's list 88 species and numerous varieties were recorded. I have availed myself of this list as a basis of the compilation I have made. In November 1934 Miss Lister with her customary thoughtfulness furnished me with another list which contained records of 98 species, the additions to the earlier list being:—

<i>Physarum psittacinum</i> Ditmar.	<i>Licea pusilla</i> Schrader.
<i>P. ovisporum</i> G. Lister.	<i>L. flexuosa</i> Persoon.
<i>Diderma montanum</i> Meylan.	<i>L. tenera</i> Jahn.
<i>Didymium Listeri</i> Masee.	<i>Hemitrichia clavata</i> (Persoon)
<i>Stemonitis hyperopta</i> Meylan	Rostafinski.
var. <i>microspora</i> Lister.	<i>Arcyria carnea</i> G. Lister.

Some of these additions arose through the promotion of varieties or forms to specific rank, and the others in the main were Miss Lister's discoveries. At present the list contains 106 species, the eight additions since 1934 being:—

<i>Physarum contextum</i> Pers.	<i>Lepidoderma Chailletii</i> Rost.
<i>Didymium laxifila</i> G. Lister & Ross.	<i>Comatracha tenerrima</i> G. Lister.
<i>Mucilago spongiosa</i> (Leysser) Morgan.	<i>Oligonema nitens</i> (Libert) Rost.
	<i>Perichaena pedata</i> G. Lister.
	<i>P. vermicularis</i> (Schweinitz) Rost.

*Comatracha tenerrima* was found on the stalks of dead Rose-bay



Willow-herb by Mr W. D. Graddon, who at the time was resident at Woodford; *Oligonema nitens* was collected by Mrs D. J. Scourfield at the Cuckoo Pits. The other additions were my own finds and were all met with in the area near the Warren, Loughton. *Didymium laxifila* is a new species that, so far as I am aware (at the time of writing), has not been recorded elsewhere, except at Woodford (on the same ridge) by Mr Graddon. This new species has been shown at meetings of the Society and the Chingford branch; it was described by Miss Lister in the *Essex Naturalist*, Vol. xxvii, part x, p. 163. The genus to which it belongs is distinguished by the presence of lime crystals in the sporangium wall; in this species the crystals are abundant and stellate; features useful in the field are the red or reddish-yellow translucent stalks and the frequent occurrence of sporangia that are confluent in small groups. The specific name refers to the capillitium forming a "lax network of stout-nearly simple or branched and anastomosing threads" to quote Miss Lister's description.

The new species and four of my other finds were first seen in the wood on the slope to the west of the Loughton-Buckhurst Hill road. The wood seems to be, partly or wholly, a plantation, as it contains a variety of trees—Wych Elm, Sycamore, Norway Maple, Grey Poplar, Sweet Chestnut, Horse-Chestnut, White-beam, and Larch, besides the usual Forest trees. *Mucilago spongiosa* developed on herbage and bramble stems, but the other four species new to the Forest were associated with decaying leaves and often with leaves lying amongst a growth of brambles. *Mucilago spongiosa*, *Lepidoderma Chailletii*, and *Perichaena vermicularis* were first found in the month of January 1935. Conditions in that winter must have been favourable for development, and such highly encouraging hunting awakened one to the possibilities of the area. *M. spongiosa* has not been recorded again, but *L. Chailletii* and *P. vermicularis* have occurred not only in the wood mentioned, but near the avenue of Black Poplars leading to the Forest Superintendent's residence. *Perichaena pedata*, a minute species, occurred on crumbling Wych Elm leaves in December 1938. It would be a delight to get this species again, but so far I have failed to find it, although sometimes my hopes have been raised by somewhat mottled forms of *Trichia contorta*, a species which at times has appeared on grass stems and leaves, whereas normally it occurs on rotting wood. Other species, some more or less uncommon, favour this small piece of woodland. *Physarum contextum* developed in January 1938 on leaves near the Black Poplar avenue, and here too hunting has given gratifying results. In recent years the typical form of *Stemonitis hyperopta* has been recorded, the var. *microspora* only having been found prior to July 1943.

Mycetozoa are divided into two sub-classes, one having the spores developed outside sporophores and the other having spores developed within sporangia. The first sub-class contains one genus of one species, *Ceratiomyxa fruticulosa*, and that species fortunately is of frequent occurrence on decaying wood in parts of Epping Forest from May until October.

The feeding stage of the Mycetozoa is passed in the form of plasmodium, and the food is usually decayed vegetable matter, mainly fallen leaves and rotting wood. One species, *Badhamia utricularis*, feeds on living fungi, *Stereum hirsutum* being a favourite food. This species is frequently seen in the Forest in damp weather in autumn and winter; of late years it has been found emerging from the bark of hornbeam boughs, sometimes as high as six feet above ground level; the bark harboured several forms of small fungi, and the plasmodium had fed on these fungi before emerging to form sporangia. *B. panicea* occurs more or less regularly, but the four other species of *Badhamia* found in the Forest are rare. *B. rubiginosa* var. *dictyospora* has been recorded three times. After being noted in 1911 and 1930, *B. macrocarpa* was not reported until 1945; all occurrences were in Wanstead Park, where *B. foliicola* has been abundant at times.

*Physarum psittacinum* has been found twice by Miss Lister in the Forest north of Loughton; it seems rare in the district; the same may be said of *P. pusillum*. *P. compressum* favours Wanstead Park and Bushwood, but *P. viride*, although not common, has appeared in widely separated areas. *P. virescens* and its variety *obscurum* are of irregular occurrence. In the genus *Fuligo* the fructification consists of many sporangia united in a mass, termed an "aethalium." *F. septica* boasts of an English name, "Flowers of Tan," which indicates one of its habitats. It is usually bright yellow when it emerges from its feeding quarters, which in the Forest consist of decaying wood. An unusual habitat occurred when some extensive aethalia developed on the skull of a Sperm Whale in the grounds of the British Museum (Natural History), South Kensington, the plasmodium having fed on animal matter inside the bone. Two other species of *Fuligo* that have been found in the Forest are rare there. Miss Lister has informed me that the one Essex gathering of the typical form of *F. cinerea* occurred on straw below old stacks in a meadow east of the Theydon railway line, and therefore outside the present boundaries of the Forest. *Craterium aureum* is less rare than was thought thirty years ago; one is disappointed if it is not found once a year.

Some species of the genus *Diderma* occur annually; others are less regular, or escape observation. It is much the same with the species of *Didymium*, but here the slight differences between some rare and a common and variable species may escape detection. *Colloderma oculatum*, a species of much interest and the only member of its family, probably develops every year in the Forest, but in unfavourable seasons may be scarce and is easily overlooked. *Stemonitis herbatica* is a species I have not seen in the Forest for some years; it used to appear regularly. *S. flavogenita* in my experience is less frequent than it was, but possibly my hunting in the northern part of the Forest has been too limited. *Comatricha elegans* has been recorded three times, *C. tenerima* twice, and *C. fimbriata* once, this last record being the original discovery of this inconspicuous species by the late Mr R. Finlayson in Wanstead Park. *Lamproderma arcyronema* is a rarity with us.



*Cribraria rufa* has been reported twice, in 1915 and 1931. *Dictydium cancellatum* is more common than was once thought; it is found annually and sometimes in large colonies.

*Licea flexuosa*, a species normally occurring on coniferous wood, developed on an oak log for a considerable period in company with *Colloclerma oculatum*; later some misguided person or persons rolled the log over and left it with the interesting side underneath. The two other species of *Licea* recorded for the Forest are very small, and we owe these records to Miss Lister's efforts. *Tubifera ferruginosa* is rare; I recall three occurrences since that reported by Mr T. Petch in 1904. Possibly *Enteridium olivaceum* is less infrequent than had been supposed, but it requires experience to detect it in the mature state; it appears on shed hornbeam bark and on logs. *Liceopsis lobata*, which was first described from specimens from Wanstead Park in 1887-8, has been found repeatedly in the Forest; it occurred after very heavy rains in the autumn of 1940, when also *Hemitrichia clavata* reappeared.

Several species of *Trichia* are common in their season, but *T. verrucosa* is rare. It may be that more regular searching in the northern part of the Forest would result in its being reported. In support of this view I recall that on a day in November 1931, when a keen party was out hunting between Theydon and High Beech, the eighteen species found included *Physarum psittacinum*, the first record for the Forest, *Cribraria rufa* and *T. verrucosa*. *Oligonema nitens* has been found repeatedly, but in one station only, namely, the Cuckoo Pits. *Hemitrichia leiotricha* developed sparingly at the Warren for five years, but has not been seen since 1942. *H. Vesparium*, which had been considered rare, seems to cling tenaciously to decaying logs when it obtains a hold. Beech logs at Great Monk Wood have yielded it several times, occasionally in abundance. On another beech log near Almshouses Plain it has thriven for some years and flourished there in 1945. In that year the species was found at six stations on beech, ash, crab and probably on grey poplar wood, too.

Six species of *Arcyria* are common to frequent in their season. *A. carnea* is one of Miss Lister's specialities. *A. Oerstedtii* has not been reported since 1916, when I first recorded it from the Forest. *Lachnobolus congestus* has been found recently, but must be classed among the rarities. *Perichaena vermicularis* may occur amongst brambles in suitable weather, but calls for intensive search in prickly surroundings. On herbage, decayed leaves and old logs the pearly sporangia of *Margarita metallica* may glisten, but not every year are they seen.

A list of the 106 species found hitherto in Epping Forest follows:—

*Ceratiomyxa fruticulosa* (Mueller)  
Macbride.  
*Badhamia populina* Lister.  
*B. utricularis* (Bulliard) Berkeley.  
*B. foliicola* Lister.  
*B. macrocarpa* (Cesati) Rostafinski.  
*B. panicea* (Fries) Rost. and var.  
*heterospora* G. Lister.

*B. rubiginosa* (Chevallier) Rost.,  
var. *dictyospora* Lister.  
*Physarum psittacinum* Ditmar.  
*P. viride* (Bull.) Persoon and vars.  
*aurantium* Lister and *incanum*  
Lister.  
*P. pusillum* (Berk. & Curtis) Lister.

- P. nutans* Pers. and vars. *leucophaeum* Lister and *robustum* Lister.  
*P. compressum* Albertini & Schweinitz.  
*P. cinereum* Pers.  
*P. vernum* Sommerfelt, var. *iridescens* Lister.  
*P. ovisporum* G. Lister.  
*P. sinuosum* (Bull.) Weinmann.  
*P. bitectum* Lister.  
*P. contextum* Pers.  
*P. virescens* Ditm. and var. *obscurum* Lister.  
*Fuligo septica* (Linné) Gmelin.  
*F. muscorum* Alb. & Schw.  
*F. cinerea* (Schw.) Morgan and var. *ecorticata* Lister.  
*Craterium minutum* (Leers) Fr.  
*C. leucocephalum* Ditm.  
*C. aureum* (Schumacher) Rost.  
*Leocarpus fragilis* (Dickson) Rost.  
*Diderma montanum* Meylan.  
*D. effusum* (Schw.) Morg.  
*D. spumarioides* Fr.  
*D. deplanatum* Fr.  
*D. floriforme* (Bull.) Pers.  
*D. radiatum* (L.) Morg., var. *umbilicatum* Meyl.  
*Diachea leucopoda* (Bull.) Rost.  
*Didymium difforme* (Pers.) Duby and var. *comatum* Lister.  
*D. trachysporum* G. Lister.  
*D. Listeri* Masee.  
*D. complanatum* (Batsch) Rost.  
*D. Clavus* (Alb. & Schw.) Rost.  
*D. melanospermum* (Pers.) Macbr. and var. *minus* Lister.  
*D. nigripes* (Link) Fr. and vars. *eximium* Lister and *xanthopus* Lister.  
*D. squamulosum* (Alb. & Schw.) Fr.  
*D. laxifila* G. Lister & Ross.  
*D. anellus* Morg.  
*Mucilago spongiosa* (Leysser) Morg.  
*Lepidoderma Chailletii* Rost.  
*Colloderma oculatum* (Lippert) G. Lister.  
*Stemonitis fusca* Roth and vars. *rufescens* Lister, *flaccida* Lister and *confluens* Lister.  
*S. hyperopta* Meyl. and var. *microspora* Lister.  
*S. splendens* Rost., var. *flaccida* Lister.  
*S. confluens* Cooke & Ellis.  
*S. herbatica* Peck and var. *confluens* Lister.  
*S. flavogenita* Jahn.  
*S. ferruginea* Ehrenberg and var. *Smithii* Lister.  
*Comatricha nigra* (Pers.) Schroeter and var. *alta* Lister.  
*C. laxa* Rost.  
*C. elegans* (Raciborski) Lister.  
*C. fimbriata* G. Lister & Cran.  
*C. typhoides* (Bull.) Rost. and var. *microspora* Lister.  
*C. pulchella* (Churchill Babington) Rost. and var. *fusca* Lister.  
*C. tenerrima* G. Lister.  
*C. rubens* Lister.  
*Enerthenema papillatum* (Pers.) Rost.  
*Lamproderma arcyronema* Rost.  
*L. scintillans* (Berk. & Broome) Morg.  
*L. violaceum* (Fr.) Rost.  
*Amaurochaete fuliginosa* (Sowerby) Macbr.  
*Brefeldia maxima* (Fr.) Rost.  
*Cribraria argillacea* Pers.  
*C. rufa* (Roth) Rost.  
*C. vulgaris* Schrader, var. *aurantiaca* Pers.  
*Dictydium cancellatum* (Batsch) Macbr. and var. *fuscum* Lister.  
*Licea pusilla* Schrad.  
*L. flexuosa* Pers.  
*L. tenera* Jahn.  
*Tubifera ferruginosa* (Batsch) Gmel.  
*Dictydiaethalium plumbeum* (Schum.) Rost.  
*Enteridium olivaceum* Ehrenb.  
*Reticularia Lycoperdon* Bull.  
*Liceopsis lobata* (Lister) Torrend.  
*Lycogala epidendrum* (L.) Fr.  
*Trichia verrucosa* Berk.  
*T. affinis* de Bary.  
*T. persimilis* Karsten.  
*T. scabra* Rost.  
*T. varia* Pers.  
*T. contorta* (Ditm.) Rost. and var. *inconspicua* Lister.  
*T. decipiens* (Pers.) Macbr.  
*T. Botrytis* Pers. and vars. *munda* Lister, *flavicoma* Lister and *cerifera* G. Lister.  
*Oligonema nitens* (Libert) Rost.  
*Hemitrictia Vesparium* (Batsch) Macbr.  
*H. leiotricha* Lister.  
*H. clavata* (Pers.) Rost.  
*Arcyria ferruginea* Sauter and var. *heterotrichia* Torrend.  
*A. cinerea* (Bull.) Pers.  
*A. carnea* G. Lister.  
*A. pomiformis* (Leers) Rost.  
*A. denudata* (L.) Wettstein.  
*A. incarnata* Pers. and var. *fulgens* Lister.  
*A. nutans* (Bull.) Greville.  
*A. Oerstedtii* Rost.  
*Lachnobolus congestus* (Somm.) Lister.  
*Perichaena pedata* G. Lister.  
*P. depressa* Libert.  
*P. corticalis* (Batsch) Rost.  
*P. vermicularis* (Schw.) Rost.  
*Margarita metallica* (Berk. & Br.) Lister.



Moist conditions are necessary for the fruiting of Mycetozoa, and as in South-West Essex the rainfall is below the average of the whole of England, the district is not climatically favourable to the development of these organisms. It has occurred to me that Wanstead Park may benefit from the areas of water in the lake and ponds, particularly in the season of mists and fogs. But fallen wood and numerous decaying logs are allowed to remain in the Forest, and with the leaf beds below holly-trees and elsewhere furnish the haunts needed for the feeding and fruiting of Mycetozoa.

### Addendum to the Report on the Survey of the Cuckoo Pits Area <sup>(1)</sup>

#### 3. 4. *The Larger Fungi.*

(This section is contributed by G. C. AINSWORTH, Secretary of the  
British Mycological Society.)

Epping Forest is a well-known collecting ground for larger fungi. It is, in the words of Ramsbottom <sup>(2)</sup>, "probably . . . the best worked area for its size in the world" and the latest critical catalogue by Pearson <sup>(3)</sup>, incorporating the records of the previous 60 years, lists over 700 species of Hymenomycetes and Gasteromycetes. The smaller fungi, however, have (with certain exceptions) been less thoroughly studied and for both groups there is little exact data on their distribution throughout the Forest and few, if any, detailed studies have been made on the fungus flora of a restricted area.

A census of the fungi of the Cuckoo Pits Survey Area was begun in September 1944 and the present list of the larger fungi is based on collections made at joint forays of the Chingford Branch and the British Mycological Society on 23rd September 1944 and 13th October 1945, and at a visit on 15th October 1944.

Pear Tree Plain was very dry at the time of all three visits and most of the collections were made during 1944 under the hornbeams and oaks south of the ponds and on the moister ground near the Cuckoo Brook. The 1945 foray coincided with a dry spell and few additions were made to the 1944 list.

The visits were little more than reconnaissance and no frequency counts or detailed observations on distribution were made but it may be noted that in 1944 on 23rd September *Amanita mappa*, *A. rubescens*, *Lactarius quietus*, *Paxillus involutus*, *Russula ochroleuca*, *R. cyanoxantha*, and *Boletus chrysenteron* were all abundant over most of the southern half of the area and that although no specimen of *Armillaria mellea* was found, it, too, was abundant on 15th October, as was *R. nigricans*, with *B. chrysenteron* still plentiful.

(1) See *London Naturalist*, No. 24 (1944), pp. 39-65.

(2) S.E. Union of Scientific Societies' Outline Scientific Survey of Essex (Congress Edit.), 1926, p. 116.

(3) List of the Fungi of Epping Forest, 1938 (Essex Field Club).

Collections of all the species recorded were taken away for examination, and dried specimens of most have been preserved for reference. Miss E. M. Wakefield very kindly made certain critical determinations and checked others and the names used are those of Carlton Rea, *British Basidiomycetae*, 1922.

## HYMENOMYCETES.

## AGARICACEAE.

*Amanita mappa* (abundant, 23.9.44),  
*pantherina*, *rubescens* (abundant,  
23.9.44).

*Amanitopsis fulva*.

*Armillaria mellea* (abundant, 15.10.44).

*Astrosporina asterophora* (frequent,  
15.10.44).

*Cantharellus friesii*.

*Claudopus variabilis*.

*Clitocybe clavipes*, *metachroa*.

*Clitopilus prunulus*.

*Collybia cirrhata*, *fusipes*, *maculata*,  
*radicata*.

*Coprinus plicatilis*.

*Cortinarius elatior*, *erythrimum*, *hin-  
nuleus*, *tabularis*.

*Flammula alnicola*, *gummosa*, *sapi-  
nea*.

*Galera hypnorum*.

*Hypholoma fasciculare*.

*Inocybe geophylla* var. *lilacina*.

*Laccaria laccata* (frequent), *laccata*  
var. *amethystina* (abundant, 1944).

*Lactarius quietus* (frequent), *seriflu-  
ous*, *subdulcis*.

*Marasmius erythropus*, *peronatus*,  
*ramealis*.

*Mycena galericulata*, *galopus*, *galo-  
pus* var. *alba*, *inclinata*, *sangui-  
nolenta*.

*Paxillus involutus* (abundant, 23.9.44).

*Pholiota spectabilis*.

*Psaliota sylvicola*.

*Psathyra fibillosa*.

*Psilocybe ericaea*, *semilanceata*, sub-  
*ericaea*.

*Russula atropurpurea*, *consobrina* ?  
var. *sororia*, *cyanoxantha*, *lepi-  
da*, *nigricans*, *ochroleuca*, *pectin-  
ata*, *venosa* Vel.

*Stropharia aeruginosa*, *semiglobata*.

*Tubaria inquilina*.

## BOLETACEAE.

*Boletus chrysenteron*, *badius*, *scaber*,  
*subtomentosus*.

## POLYPORACEAE.

*Polyporus sulphureus*, on oak.

*Polystictus versicolor*.

*Fistulina hepatica*, on oak.

*Merulius tremellosus*.

## CLAVARIACEAE.

*Clavaria cinerea*, *inaequalis*.

## THELEPHORACEAE.

*Stereum purpureum*, *rugosum*.

*Corticium albostramineum*.

## GASTEROMYCETES.

*Mutinus caninus*.

*Phallus impudicus*.

*Lycoperdon perlatum*, *umbrinum*.

*Scleroderma vulgare*.

*Sphaerobolus stellatus* (plentiful in the  
litter by the Cuckoo Brook path,  
1944).

## The Climate, 1945.

By H. HAWKINS.

(Observed at 119 Beresford Road, Chingford.)

1945 could be called a mild, dry and dull year. There was a severe January, a very mild and sunny spring, and a very dull summer. Sunshine was below average for the fifth successive year, and rain for the fourth. The full particulars are recorded in the table. For explanatory notes on the instruments used, and for definitions of terms, the report for 1944\* should be referred to.

\*H. Hawkins, "The Climate, 1944," *London Naturalist*, No. 24, p. 36, 1945.



Month.	BAROMETER.			TEMPERATURE (Degrees Fahr.).										RAIN.			THUNDER SALES. STORM. FOG.		
	(Inches of Mercury)			SHADE.				GRASS.						No. of No. of			No. No. No.		
	Max.	Min.	Ave.	Max.	Ave.	Min.	Ave.	Daily Range.	Max.	Min.	Ave.	Amt. in Inches.	Days.	Wet Days.	No.	No.	No.		
Jan.	30.65	28.70	29.94	48	16	37.38	29.45	33.41	7.93	32	37	10	26.39	20	10	4	1	1	
Feb.	30.75	29.45	30.17	62	30	51.32	40.53	45.92	10.79	32	47	24	36.82	15	9	7	1	2	
Mar.	30.80	29.75	30.31	69	28	56.16	39.03	47.59	17.13	41	48	20	33.06	11	5	3	—	3	
Apr.	30.55	29.55	29.98	80	30	61.73	42.30	52.01	19.43	50	54	26	37.50	10	6	2	—	1	
May	30.00	29.50	29.75	84	30	66.13	47.32	56.92	18.81	54	56	24	42.64	12	9	2	4	—	
June	30.25	29.60	29.74	80	43	69.26	52.10	60.68	17.16	37	58	38	47.80	17	12	2	—	—	
July	30.10	29.50	29.81	85	48	73.32	55.26	64.29	18.06	37	60	42	51.29	12	7	2	4	—	
Aug.	30.10	29.40	29.73	88	46	70.39	54.29	62.34	16.10	42	58	40	49.99	16	9	1	2	—	
Sept.	30.45	29.50	29.93	78	40	65.70	52.70	59.20	13.00	38	58	35	48.60	18	12	3	1	1	
Oct.	30.55	28.95	29.95	74	38	61.71	46.29	54.00	15.42	36	52	30	40.74	10	8	4	—	5	
Nov.	30.30	29.80	30.00	61	30	50.60	40.93	45.75	9.70	31	50	22	37.06	10	4	—	—	6	
Dec.	30.45	28.70	29.74	54	24	45.77	36.00	40.86	9.77	30	46	18	31.26	19	13	3	—	4	
Year.	30.80	28.70	29.92	88	16	59.12	44.68	51.90	14.44	72	60	10	40.25	170	104	33	13	23	

## Obituary.

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### Leslie Beeching Hall.

**L.** B. HALL, who joined the Society in 1898, was unknown to most of the present members, but thirty years ago he was one of the group of expert botanists which included among others Messrs E. B. Bishop, C. S. Nicholson, and R. W. Robbins.

For some years he was on the Council and for six years he acted as botanical curator. The papers he read showed a masterly knowledge of his subject and were often illustrated by the exhibition of rare plants and critical species. Plant Galls, Snakes, Lizards and Frogs also attracted his attention and when in 1924 he retired from London to Dorset he was able to keep these under observation in his garden at Parkstone. He continued his interest in the Society and sent up notes and records for our benefit. The *London Naturalist* for 1928 contains an article on "The Smooth Snake," and in the next year appeared "Some Recent Additions to the British Flora."

Resigning his membership in 1933, he devoted his energies more to the Bournemouth N.H.S. until impaired health restricted his activities. In 1944 an operation failed to give him the desired relief, and after much pain he passed away in his sleep on 28th October 1945.

Those of us who were fortunate enough to know him can cherish memories of much delightful intercourse at meetings and of many happy days in the country.

He leaves a widow to whom we offer our sincerest sympathy.

H. J. B.

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### Clive Bramwell Smith.

Clive Bramwell Smith, who died on the 24th August 1945 in his 74th year, was one of the founder-members of the North London Natural History Society in 1892. For some years, too, he was a member of the City of London Society, and at a later stage became a Fellow of the Royal Entomological Society.

Son of the late Frank Smith, H.M. Surveyor of Taxes, his earliest years were passed in the provincial centres where his father was stationed, but in the middle eighties the family came to London. Clive Smith was sent to the Grocers' Company's School, and there met several kindred spirits who remained his life-long friends. School holidays were often spent with his relatives at Blandford, Dorset, and on the chalk downs there he made his outstanding capture—a perfect gynandromorph of *Lysandra coridon*.

After leaving school he qualified as a Chartered Accountant, and eventually set up in business with his school friend R. G. Longcroft. The arduous early years were relieved by summer vacations in the Lake



District, North Wales, Devon, and Cornwall. Later he was attracted to the Continent, spending rambling and climbing holidays in the Alps, and, still later, he went with friends to such famous entomological localities as the Pyrenees, Angoulême, Digne, Belgium, Austria, and the Italian Tyrol.

In his earlier years he was a regular attendant at the Society's meetings and excursions, holding several offices and serving on the Council; but latterly we saw him only on special occasions, the last being Dr Cockayne's lecture on the work of Louis B. Prout. The Society of to-day, therefore, hardly knew him; but those of us who were closely associated with him to the end realise that in him we have lost a loyal and delightful friend, and that the world is poorer for the passing of one of Nature's gentlemen.

J. A. S.

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## Papers Read to the Society in 1945.

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An Introduction to Soil Study—D. G. Tucker, Ph.D., January 20.

Birds and Agriculture (Presidential Address)—J. B. Foster, B.A.;  
Natural History Brains Trust—Question-Master, R. W. Hale,  
February 17.

An Appreciation of L. B. Prout and his Work—E. A. Cockayne, M.A.,  
D.M., F.R.C.P., F.R.E.S., March 17.

The Museum and the Field Ornithologist—R. Wagstaffe, M.B.O.U.,  
April 17.

Yellow Fever, Ibis, and Elephants on the Gold Coast—Major T. A.  
Cockburn, M.D., May 15.

Wading Birds—J. S. Carter, Ph.D., M.Sc., F.I.C., June 19.

The Wealden Iron Foundry and its Products—E. Yates, F.S.A., July 17.

Discussion on the Work of the Ornithological Section, August 21.

Recent Trends in Ornithology—A. Landsborough Thomson, C.B., D.Sc.,  
September 18.

Cynipid Flies and Galls on Oak—J. Ross, October 16.

Natural History Brains Trust—Question-Master, R. W. Hale, Novem-  
ber 20.

Sketching as an Aid to Bird-Watching—Roland Green, F.Z.S., Decem-  
ber 18.

## Official Reports for 1945.

### Council's Report.

OUR membership now exceeds 600: a record in the history of the Society. On 31st October the total was 606, comprising 401 Members, 50 Branch Associates, 50 Country and School Associates and 105 on the Register. This represents an increase of 37 over the published figure for last year.

Ornithology was still the dominant interest among those new members who expressed preferences, but no section was unrepresented and most new members expressed interest in more than one branch—a healthy sign in a general natural history society.

This year has seen many changes in the Society's officials. After sixteen years as General Secretary, Mr Hornblower has been obliged to retire from that office on account of ill health. During his tenure of office, membership has almost doubled and this may be attributed in no small degree to Mr Hornblower's untiring efforts. An appreciation of his services to the Society was published in the *London Naturalist*, No. 24. Mr H. A. Toombs was appointed General Secretary on 1st May. Mr E. A. Round has taken the place of Dr D. G. Tucker as Secretary of the Chingford Branch. The Society's special thanks are due to Dr Tucker for his work with the Chingford Branch, which owes so much of its present virility and efficiency to his efforts. We are also indebted for his help in ensuring the smooth running of the Society during Mr Hornblower's illness. Mr H. J. Burkill succeeded Mr C. J. Duffin as Minuting Secretary and Miss Johns succeeded Mrs Parrinder as Lantern Secretary. To all these retiring officers the Council offers its sincere thanks for their services.

On his return to London, Mr C. L. Collenette accepted the offer of co-option on to the Council.

Mr Burkill has been appointed to represent the Society on the Bookham Commons Committee of the National Trust.

The recommendations of a Committee set up by the Council to consider means of interesting young people in natural history, led to the appointment of Miss H. Franks as Schools Liaison Officer and to the inauguration of a series of lecture-rambles for teachers. Closer contact is also to be sought with the School Nature Study Union and an advertising campaign has been started to bring the activities of our Society to the notice of teachers in the London area.

It has been decided to discontinue the Temporary Register as from 1st January 1946.

Meetings of the Nature Reserves Committee were resumed in December 1944 after a long break imposed by flying-bomb activity. The London recommendations have been considered more fully, especially in relation to Sir Patrick Abercrombie's Greater London Plan, and a detailed



report is being prepared. Mr E. F. Bunt has taken charge of the geological recommendations and his report on them was sent to the Nature Reserves Investigation Committee. Some were considered of sufficient importance to be included in their report—"National Geological Reserves in England and Wales"—published in 1945.

H. A. TOOMBS, *Hon. General Secretary.*

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### Librarian's Report.

Although there was an increased attendance at meetings, the Library was not so well used in 1945 as during the previous year. The numbers of books issued to members serving in the Forces and living out of London also declined.

The Society is particularly indebted by Mr C. P. Castell for enabling the Council to purchase a valuable collection of bird books from the library of the late Mr J. E. Nash. Members of the Ornithological Section have busied themselves squeezing some of these books on to the shelves and in marketing others for which no shelf room could be found.

The difficulty of housing the Society's books and periodicals and producing an up-to-date catalogue grows with each acquisition, and I have long felt that a Librarian with more time than I can spare for this work is needed. Five years ago, when I was pressed to help first with the minuting and later with the Library, there was a serious shortage of workers. Fortunately, the position with regard to helpers is improving, but I realise that the member who accepts the office of Librarian has a difficult job before him and that he will need help from old and new friends of the Society in getting the Library back to something like its pre-war status and usefulness.

T. L. BARTLETT, *Librarian.*

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### Curator's Report.

I have much pleasure in reporting that the Curators of the more active sections of the Society have been present as frequently as they have found possible at the Monthly Corridor Meetings for the purpose of attending to the Collections in their care.

It has been particularly satisfactory when Curators have been available to answer queries and show specimens to members or visitors who have attended specially to gain information relative to the Society's particularised activities not otherwise readily obtainable.

There has been one change in Curatorship during the year. Early in March Miss McEwen took over the responsibility of the Ornithological Collection from Mrs Parrinder, and I should like to pay tribute to her continuous enthusiasm under conditions sufficiently dismal in every way to deter any but a conscientious worker.

In April Miss McEwen called my attention to a cardboard box containing a part of the wing collection. This was seriously affected by

moth and larvae and some items not of great importance had to be destroyed. I reported the matter to the Ornithological Section, and a number of members, with myself, examined the remainder of the boxes. These were found to be in satisfactory condition. Repairs were made to one of the trunks housing the Holte Macpherson collection.

The Rev. P. H. Cooke, of the Botanical Section, has made several additions to the Herbarium during the year, including a number of sheets the material for which was contributed by Mr R. S. R. Fitter. The resignation of our esteemed Botanical Curator has already been announced to take effect from the end of the year and suitable acknowledgment of his services made.

As warden of the Entomological Section, Mr Pinniger reports that the Collections are in good order. He has at various times taken drawers away for inspection and renovation. He would like a competent volunteer to come forward who is in a position to add to the Coleoptera cabinet.

With regard to the Plant Galls, Mr Burkill writes that several fresh specimens have been taken this year which will be added to the Collection when mounted.

At the close of the second year of the Tuesday Corridor Evenings I wish to place on record that in my considered opinion the scheme has been worth while in meeting a need for keen workers and members in the long gap of the monthly meetings.

I thank my fellow curators for their continued enthusiasm under difficult conditions.

L. G. PAYNE, *Curator.*

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### **Chingford Branch Report.**

The usual Branch Meetings were held during the year. Attendances at the eight indoor meetings averaged 28, while attendances at the twelve field meetings averaged 13. These were up to the usual level, despite the most troublesome forms of enemy activity. Summer field meetings were extended to the evening, but were not so well supported.

Dr D. G. Tucker unfortunately had to give up the Branch Secretaryship in the Spring on leaving Chingford, and at the Branch Council's request, I became Secretary. Now, however, he has returned, and is going to continue with the Epping Forest Survey as organising Secretary.

Dr Tucker also has taken over the Nature Reserves Secretaryship from Mr C. S. Bayes, who has left the district. Mr Bayes did a large amount of valuable and detailed investigation into the reserves in the N.E. London area, and the Branch is extremely sorry to lose him.

Last spring, a number of members, ably organised by Mr W. A. Wright, made a census of the rookeries over a large part of the Society's area in Essex, as part of the Rookery Census of the London Area organised by the Society on behalf of the Rook Investigation of the British



Trust for Ornithology, under grant from the Agricultural Research Council. Some 2000 nests were recorded.

Seven new Branch Associates have joined the Society during the year.

E. A. ROUND, *Branch Secretary*.

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## Sectional Reports for 1945.

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### Botanical Section.

No sectional meeting was held at headquarters this year, but we are looking forward to a resumption of this feature of our activities during 1946.

The Excursion Syllabus included eight field meetings, the average attendance at these being 12. Considerable interest was shown in the tour of the City of London Bombed Sites so ably led by Mr J. E. Lousley. The visit to Kew Gardens, under the guidance of Mr H. Spooner, was also very popular.

It is with regret that we have to report the resignation from the Curatorship of our Botanical collections of the Rev. P. H. Cooke, who has, for a number of years, spared no effort to arrange and maintain our Herbarium in good order. Mr D. H. Kent has undertaken to continue this work.

The Section now has a membership of 132.

The Annual Report of the Botanical Exchange Club is still circulating to 17 members.

A number of useful records has been received by the Recorder during the year; these are the subject of a special report by Mr J. E. Lousley.

L. G. PAYNE, *Chairman*.

G. R. A. SHORT, *Secretary*.

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### Ecology Section.

The Section was responsible for one lecture, "An Introduction to Soil Study," given by Dr D. G. Tucker on the 20th January.

One of the most successful excursions was the Fungus Foray at Bookham Common on the 29th October, held in conjunction with the Botanical Section and the British Mycological Society. An extensive list of the species recorded by its members was subsequently sent in to the Secretary by the British Mycological Society. Joint meetings with the Ornithological Section were held on the Common on the 22nd April and 17th June and an all-night visit for birds arranged for Saturday, 26th May, but as a result of the continual rain on this Saturday, only 2 members attended.

The Section's activities are still centred around the Bookham Common Survey, and since October 1944 153 visits have been made by 50

members and visitors on the official sectional meetings, an average of 10 per meeting. The results of some of the Section's investigations at Bookham Common were embodied in several papers in the *London Naturalist* for 1944.

The Reading Circles continue to flourish, there now being 24 subscribers, five more than last year; 13 subscribe to the *Journal of Animal Ecology*, five to the *Journal of Ecology*, and six to both.

L. G. PAYNE, *Chairman*.

C. P. CASTELL, *Secretary*.

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### Entomological Section.

Ecological work has continued at Bookham Common throughout the year, but the organized activity of the Section is still handicapped by the paucity of members able to attend meetings regularly. It is hoped that with the end of the war there may be a general improvement in attendance both at indoor and at field meetings during 1946.

At the indoor meeting held on Saturday, 17th March 1945, Dr Cockayne gave an interesting talk on the life and work of our late member L. B. Prout. Seventeen members were present, many of whom had known Mr Prout during his association with the Society, and it was evident that Dr Cockayne's tribute to this great entomologist was welcomed and very much appreciated.

The first field meeting of the season was held at Oxshott on 29th April, but the weather was cold and insects were scarce. Very little of interest was recorded.

At Holmwood on 27th May particular attention was given to Lepidoptera, and 13 species of butterflies were noted. Amongst Coleoptera the local *Leptura cerambyciformis* was seen. The meeting at Byfleet on 24th June was a failure from the entomological viewpoint.

On 15th July the Section met at Caterham and proceeded thence to Godstone, where the most interesting occurrence of the day was the sight of three specimens of the immigrant dragonfly *Sympetrum flaveolum* at Ivy Mill Pond.

During the second half of the year it was decided to plan one or two field meetings for particular Orders, partly to stimulate interest in the less-known Orders and partly to secure a measure of co-ordination of activity amongst those present on each occasion.

Thus on 19th August a meeting was arranged to study Orthoptera on the North Downs at Dorking, and though the weather was not entirely favourable the 10 members present spent an interesting day and recorded 7 species from this comparatively neglected group of insects.

On 16th September the meeting at Byfleet was devoted to Odonata. The day was fine and warm, and the usual late-summer species were observed along the Basingstoke Canal and on the adjacent bogland.

A second innovation which has been introduced during the past year has been the allocation of a definite day each month, viz. the third Sun-



day, for the Section's field meetings. It was thought that this arrangement, if continued regularly, would be useful to members who might wish to plan their activities well in advance.

The total membership of the Section has increased during the year from 85 to 92. The average attendance at field meetings has been 8.

Fifteen members enjoy the facilities of the sectional reading circle, which continues to circulate each month the *Entomologist*, *Entomologist's Record* and *Entomologist's Monthly Magazine*.

CYNTHIA LONGFIELD, *Chairman*.

R. M. PAYNE, *Secretary*.

### Geological Committee.

One of our members, Mr E. F. Bunt, agreed to act as recorder for Geological Reserves in the London area for the Nature Reserves Investigation Sub-Committee and he has compiled a schedule of recommendations which has been forwarded to the main N.R.I.C. A number of our recommendations have been adopted as national reserves and appear in the Report on National Geological Reserves issued by the N.R.I.C.

Mr Bunt also volunteered to act as recorder for Temporary Geological Sections in our area and has prepared a note on the subject for the *London Naturalist*.

C. P. CASTELL, *Secretary*.

### Ornithological Section.

*Membership*: On 31st December 1945 there were 410 members on the Sectional roll, 29 more than on 31st December 1944; 30 Country Associates and 13 Branch Associates are included in this total and 82 of the members are on the Register.

*Indoor Meetings*: After the resumption of the Society's activities the Section provided lecturers at four General Meetings and held one Sectional meeting. At the General Meetings we heard Mr R. Wagstaffe, Keeper of the Yorkshire Museum, on "The Museum and Field Ornithologist" and Dr A. Landsborough Thomson on "Recent Trends in Ornithology." Dr J. S. Carter gave an illustrated lecture on "Wading Birds" and Mr Roland Green illustrated a talk on "Sketching as an Aid to Bird Watching." At the Sectional meeting there was a discussion on the work of the Section.

*Officers*: During the year Miss C. E. Longfield became Chairman of the Section in succession to Mr R. S. R. Fitter. Mr R. C. Homes and Mr D. A. T. Morgan were added to the Committee and Mr G. E. Manser became Joint Sectional Curator.

*Field Meetings*: 25 field meetings were held, at which the average attendance was 17. The evening meeting in the City to see the Black Redstart attracted the largest attendance, about 40 members being present. Owing to bad weather only two members attended the first all-

night ramble held for several years and, unfortunately, they did not meet one another.

*Reading Circles and Book Fund:* There has been a steady increase in the membership of the *British Birds* Reading Circles and at the end of the year five copies were circulating among 50 members. In anticipation of further expansion, the number of copies will be increased. The subscription is 2s 6d per annum, and new members will be welcomed. The Book Fund, to which any profits from the reading circles accrue, is being built up again after a lean period during the war and was able to make a donation of £1 1s towards the cost of the "Nash Collection" of ornithological books. It is hoped soon to resume purchase of books needed for the Library.

*The Library:* Thanks to the action of the Council a valuable collection of ornithological books belonging to the late Mr J. E. Nash has been acquired for the Library.

*Curator's Report:* The collection of photographs has been re-numbered and the small collection of wings examined and labelled. Messrs Ashby and Pearce have presented wings and Miss R. Davis some eggs to the collections. All the skins have been examined and protected against moth. It is hoped that the cataloguing of the valuable Holte Macpherson collection presented to the Section at the outbreak of war will now be able to be taken in hand.

*The London Bird Report:* Full details of the work of the Records Committee and an account of the Section's bird-ringing activities will be found in the *London Bird Report* for 1945.

CYNTHIA E. LONGFIELD, *Chairman.*

R. W. HALE, *Secretary.*

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### Plant Galls Section.

The Plant Galls Section has carried on quietly through the year, but on the whole the results have not been up to what was hoped for. Some of the best areas were in the hands of the Army and so could not be visited, and many species of insects seem to have been absent, as their galls were not seen, while the Oaks were still suffering from the wiping out of the spring generation of several species in 1944.

In spite of these handicaps some fresh species were added to our list of British galls, and further specimens have been placed in the Section's collection.

Six Field Meetings were carried through with an average attendance of three members.

On 16th October Mr Ross read a paper to the Society in which the work done in investigating the Alternate Generations of the Cynipidae was described and the discoveries of previously unknown linkages was recorded.

J. Ross, *Chairman.*

H. J. BURKILL, *Secretary.*



### Ramblers' Section.

Membership, 74—47 Members, 20 Register Members, and 7 Country Associates.

Number of Indoor Meetings held during the year: Two.

Number of Outdoor Meetings arranged during the year: Five.

On Tuesday, 15th May, Major T. A. Cockburn gave a very interesting talk on "Yellow Fever and Elephants on the Gold Coast," illustrated by lantern slides. The second meeting at Headquarters was held on Tuesday, 17th July, and a talk was given by Mr E. Yates, F.S.A., on "The Wealden Iron Foundry and its Products." This was also illustrated by slides. Both meetings had an average attendance of about 25.

Four out of our five rambles have taken place, and have had an average attendance of six, although on one occasion only two people were present. Places visited have been Hertford, Caterham, Nazeing and Kew Gardens; Wimbledon and Richmond Park will be visited in November. On the Nazeing excursion, while out Ley-hunting, our party were allowed to inspect the house and outbuildings of "Greenleaves," a sixteenth century building illustrated and described in the Essex volume of the Royal Commission on Historical Monuments. We would like to take this opportunity of thanking the leaders who have taken so much trouble in arranging our rambles.

L. J. TREMAYNE, *Chairman*.

Miss L. J. JOHNS, *Secretary*.

## Sectional Chairmen and Secretaries, 1945.

**Archaeology:** Chairman, W. C. Cocksedge; Secretary, Mrs Cocksedge, 10 St Mary's Avenue, Shortlands, Bromley, Kent.

**Botany:** Chairman, L. G. Payne, F.Z.S.; Secretary, G. R. A. Short, 36 Parkside Drive, Edgware, Middx.

**Ecology:** Chairman, L. G. Payne, F.Z.S.; Secretary, C. P. Castell, B.Sc., 52 Graham Road, S.W.19.

**Entomology:** Chairman, Miss C. E. Longfield, F.R.G.S., F.R.E.S., F.Z.S., M.B.O.U.; Secretary, R. M. Payne, 22 Marksbury Avenue, Richmond, Surrey.

**Geology:** Chairman, Lt. J. F. Hayward, Ph.D., M.Sc., F.G.S.; Secretary, C. P. Castell, B.Sc., 52 Graham Road, S.W.19.

**Ornithology:** R. S. R. Fitter, F.Z.S., M.B.O.U.; Miss C. E. Longfield, F.R.G.S., F.R.E.S., F.Z.S., M.B.O.U.; Secretary, R. W. Hale, 6 Grendon Gardens, Wembley Park, Middx.

**Plant Galls:** Chairman, J. Ross; Secretary, H. J. Burkill, M.A., F.R.G.S., 3 Newman's Court, Cornhill, E.C.3.

**Ramblers:** Chairman, L. J. Tremayne, F.Z.S.; Secretary, Miss L. J. Johns, 87 Morley Hill, Enfield, Middx.





## Book Review.

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*London's Natural History.* By R. S. R. Fitter. London: Collins, 16s.

This book makes a most thorough study of the Natural History of the London area, tracing the effect of man's activities on the countryside from the beginnings of history to the present time.

When the London Natural History Society first adopted the area of a twenty mile radius from St Paul's Cathedral for special study, it was fixed rather as a convenient limit for excursions to interesting districts than as defining the boundary of the London area. Mr Fitter, who has adopted the same radius, shows that it is now none too large, and that at the present rate of expansion the area may shortly be outgrown.

The London area is, from the varied conditions, types of soil, ease of access and facilities for verifying observations, perhaps the finest training ground in the British Isles for the naturalist. Where else, for instance, could one see all the species of duck, grebe and diver, with one exception, in a couple of winters, or find 170 species of alien plants in the area of a single square mile?

The book is crammed with interesting facts. Selecting at random, one reads of former vineyards at Westminster and Holborn, early famines when men ate dogs and fern roots, the origin of the word "forest," and an account of the first recorded botanical ramble in the country. In more modern times, an account of the extensive flora and fauna associated with waterworks and filter beds with methods of combating the same, the history of the Grey Squirrel in the London area, and the effects of the two wars on birds, plants and insects.

Mr Fitter's facts are well sorted and accessible, and, apart from his own personal work in the field for the purposes of the book (of which he modestly says nothing but which can be discerned throughout its pages), the extensive bibliography shows that his task has been no mean one.

The book has a large number of well-chosen photographic illustrations, over half of them coloured, and among which the beautiful work of Mr Eric Hosking predominates.

Every naturalist, and in particular every member of the London Natural History Society, should possess a copy, seeing that the author records his indebtedness to "all those members of the Society whose assiduity in amassing records has made the book possible," and, moreover, because it is interesting in every page and of permanent value for reference.

C. L. C.

## Entomological Recording.

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THE Entomological Section is compiling records in all Orders of insects for the Society's area with a view to publication. This faunistic survey covers both historical and ecological aspects, and it is hoped that all London entomologists will be interested in the scheme and will participate in it. A Recording Secretary has been appointed to keep the files and distribute the data to the specialists in the different Orders who have undertaken compilation. All correspondence should be sent to:—Mr P. W. E. Currie, 102 Burdon Lane, Belmont, Sutton, Surrey.

While a record of occurrence and habitat for any group can never be complete, or even approximately complete, it is hoped by the end of 1946 to have sufficient data for initial publication in the two groups of Odonata and Lepidoptera Rhopalocera. Unpublished records of all species, and especially for 1945 and 1946, are therefore sought. Records for all other Orders, covering as many past years as possible, are also requested. Each Order should be entered on a separate sheet, to facilitate distribution to the specialists. Special emphasis is laid on records from the blitzed sites in Inner London, as to the extent to which adventitious plants have been colonized by insects. It is also hoped to be able to collect together the unpublished records of the older entomologists who are still living, showing the faunistic changes during their lifetime, in any of the districts now comprising Greater London.

All entomologists residing in or near London, irrespective of their membership of the Society, are therefore cordially invited to co-operate in this plan.

C. E. L.



## List of Members.

(Corrected up to 24th April 1946.)

*It is particularly requested that Members will inform the Secretary as soon as possible of any change of address.*

For list of abbreviations, see end.

### Honorary President:

PROF. SIR FREDERICK GOWLAND HOPKINS, O.M., M.A., M.D., F.R.C.P., F.R.S.

### Honorary Vice-Presidents:

SIR LAWRENCE CHUBB. E. A. COCKAYNE, M.A., D.M., F.R.C.P., F.R.E.S. PROF. M. GREENWOOD, D.Sc., F.R.S., F.R.C.P. A. B. HORNBLOWER. A. HOLTE MACPHERSON, B.C.L., M.A., F.Z.S. J. ROSS.

### Honorary Members:

- 1916 Brown, A., F.Z.S., 64 Sancroft Road, Eastbourne, Sussex. (Arch., Geol., Orn., R.)  
 1933 Bryce, E. J., Nelson Road, Killara, Sydney, N.S.W. (Zoo.)  
 1927 Le Souef, A. S., C.M.Z.S., R.A.O.U., Taronga Zoological Park, Sydney, N.S.W.

### Members:

- 1943 Abery, Miss W., Education Department, Box 263, Kampala, Uganda. (Bot., Ecol., Geol.)  
 1946 Absolon, Miss E. M., 23 Netherlands Road, New Barnet, Herts.  
 1929 Acland, Miss C. M., M.B.O.U., 2 Orchard Close, Banstead, Surrey. (Orn.)  
 1946 Ainslie, B., 18 Walpole Court, Hampton Road, Strawberry Hill, Twickenham, Middx. (Geol.)  
 1946 Ainslie, Mrs B., 18 Walpole Court, Hampton Road, Strawberry Hill, Twickenham, Middx. (Geol., Bot.)  
 1928 Alexander, O. A., c/o Tower House, Guilsborough, Northants. (Ent.)  
 1944 Allden, Miss B. J., 110 The Ridgeway, Enfield, Middx. (Orn., R.)  
 1939 \*Allen, Miss D. (address not known).  
 1945 Allison, J. R., 9 Littlecroft, Eltham, S.E.9. (Orn., Pl. G.)  
 1945 Allison, Mrs R. E., 9 Littlecroft, Eltham, S.E.9. (Orn., Pl. G.)  
 1932 Angell, Miss K. W., Stockwell College, The Old Palace, Bromley, Kent. (Bot., Ecol., Ent., Orn., Pl. G., R.)  
 1946 Ansell, Mrs E. V., 89 Dorset Road, Merton Park, S.W.19. (Bot.)  
 1932 Arbon, Mrs J. A., Brookside, Eversley Park Road, N.21. (Arch.)  
 1942 Archer, H. A., 76 Endlebury Road, E.4. (Orn.)  
 1945 Ardley, M., 28 Corbets Avenue, Upminster, Essex. (Orn.)  
 1945 Ashburner, Miss M., 13 Kempsford Gardens, Earl's Court, S.W.5. (Orn.)  
 1939 Ashby, C. B., 20 Denmark Road, Carshalton, Surrey. (Orn.)  
 1892 Austin, S., F.Z.S., 43 Darenth Road, N. 16. (Arch., Bot., Ecol., Orn., R.)  
 1931 Back, Dr Marjorie, 10 Great George Street, S.W.1. (Bot., Orn.)  
 1929 \*Bagnall, R. S., D.Sc., F.R.S.E. (address not known). (Bot., Ent., Pl. G.)  
 1944 Bailey, A. J. M., 3 East Road, Maidenhead, Berks. (Bot.)  
 1927 Baily, Miss A. R., Cressex Lodge, Binfield, Berks. (Arch., Bot., Ent., Orn., Pl. G., R.)  
 1941 Ballingal, N. C., 120 Cranmer Court, S.W.3. (Orn.)  
 1944 Balter, R. S. D., F.R.E.S., 18 Ferncroft Avenue, N.W.3. (Ent., Micr.)  
 1934 Banks, H., 66 Sussex Avenue, Isleworth, Middx. (Bot., Ecol., Orn.)  
 1927 Barclay-Smith, Miss P., F.Z.S., M.B.O.U., 51 Warwick Avenue, W.9. (Orn.)  
 1946 Barnacle, J. F., Three Gables, Common Road, Redhill, Surrey. (Mam.)  
 1926 Barnes, Mrs E. C., M.B.O.U., Hungerdown, Seagry, Wilts. (Bot., Ecol., Orn.)  
 1941 \*Barrington, F. J. F., 48 Wimpole Street, W.1. (Orn.)

- 1941 Bartlett, T. L., B.A., M.B.O.U., 91 Woodend Avenue, S. Harrow, Mx. (Ecol., Orn.)
- 1945 Barton, Miss M., 38 Swyncombe Avenue, Ealing, W.5.
- 1903 \*Battley, Mrs, 1 Sydney Road, Guildford, Surrey.
- 1946 Batts, M. S., 17 Heslop Road, Balham, S.W.12. (Orn.)
- 1946 Batts, S. G., 17 Heslop Road, Balham, S.W.12. (Orn.)
- 1932 Bayliss, C. V., 38 Colwyn Avenue, Blackpool. (Arch.)
- 1915 Bayne, C. S., Savage Club, 1 Carlton House Terrace, S.W.1. (Ecol., Orn.)
- 1943 Beamish, A. J., Epping House, near Hertford. (Orn.)
- 1946 Beazley, His Honour Judge Hugh, J.P., Wormley Hill House, Wormley, Broxbourne, Herts. (Orn.)
- 1936 Beckwith, Major W. M., D.S.O., 59 Albert Hall Mansions, S.W.7. (Orn.)
- 1944 Beddington, A., Lily Farm, Princes Risborough, Bucks. (Ent., Mam., Orn.)
- 1946 Bedford, W. D., F.R.E.S., The Ferris, Mill Lane, Broxbourne, Herts. (Orn.)
- 1943 Beesley, J. S. S., 63 Warren Avenue, Bromley, Kent. (Bot., Ecol., Orn.)
- 1946 Bennett, Miss E. A., 16 Inchmery Road, Catford, S.E.6. (Ecol., Orn.)
- 1946 Bensley, Lt.-Col. G. J. F., Vincent House, London, W.2. (Conch., Ent.)
- 1929 \*Benson, R. B., M.A., F.R.E.S., British Museum (Natural History), S.W.7. (Bot., Ecol., Ent., esp. Sawflies, Orn., Pl. G., R.)
- 1932 Bentham, C. H., Eothen, 11 Epsom Lane South, Tadworth, Surrey. (Orn.)
- 1937 Best, Miss M. G., M.R.C.S., L.R.C.P., 115 Widmore Road, Bromley, Kent. (Orn.)
- 1940 Beven, G., Cromer Hyde, Central Road, Morden, Surrey. (Orn.)
- 1932 Binley, Sister, E.M., T.A.N.S., P. 209810/1, 17th General (London) Hospital, c/o A.P.O. 1665. (Orn., R.)
- 1946 Bird, Miss B. J., 5 Greenend Road, Bedford Park, W.4. (Orn.)
- 1941 Bispham, T., B.Sc., A.I.C., 2 Chestnut Avenue, Wembley, Middlesex. (Orn.)
- 1930 Blair, K. G., D.Sc., F.R.E.S., Pentwyn, Afton Road, Freshwater, I.O.W. (Ent.)
- 1939 Blake, E. A., 16 Lindsay Road, Worcester Park, Surrey. (Orn.)
- 1937 Blake, F. W., 16 Lindsay Road, Worcester Park, Surrey. (Orn.)
- 1946 Boggis, Miss L., 60 Shuttleworth Road, S.W.11. (Orn., R.)
- 1937 Bond, Mrs M. T., 8 Messaline Avenue, W.3. (Orn.)
- 1945 Boucher, F. P. D., 17 Helena Court, Eaton Rise, Ealing, W.5. (Arch., Geol., Bot.)
- 1941 Bourne, K. W., 47 West Way, N.W.10. (Ecol.)
- 1946 Bowhay, Miss L. C., 7 Church Avenue, East Sheen, S.W.14. (Bot., Orn.)
- 1945 Braby, C., 5 Arundel Street, W.C.2. (Orn.)
- 1946 Bradbrooke, Mrs J., 34 West Hill Court, Millfield Lane, N.6. (Orn.)
- 1904 Bradley, S. W., 4 Lucton's Avenue, Buckhurst Hill, Essex. (Bot., Ent., Orn.)
- 1932 Braithwaite, Miss D. M., 18 Warren Road, E.4. (Orn.)
- 1910 Braithwaite, Miss N. A., 18 Warren Road, E.4.
- 1937 Brightwell, L. R., F.Z.S., White Cottage, Chalk Lane, East Horsley, Surrey. (Marine Life.)
- 1933 Bromley, Miss B., 12a Eaton Road, N.W.3. (Orn., R.)
- 1942 Bromley, F. C., 93 Wolmer Gardens, Edgware, Middx. (Orn.)
- 1946 Brooke, Miss W. M. A., 300 Philip Lane, Tottenham, N.15. (Marine Biol., Bot., Economic Ent.)
- 1946 Brown, Dr A. G., M.B.O.U., 24a Campden Hill Gardens, W.8. (Orn.)
- 1937 Brown, Miss B. E., Gresham Cottage, Granville Road, Limpsfield, Surrey. (Ecol., Orn.)
- 1926 Browne, Miss C. H., 11 St Mary's Walk, Harrogate, Yorks. (Arch., Bot., Orn., R.)
- 1940 Browne, Miss E. Gore, 3 Claremont House, Lithos Road, N.W.3. (Orn.)
- 1938 Buck, F. D., c/o 49 Elthorne Road, N.19. (Col., Ecol.)
- 1944 Bunt, E. F., 34 Buckleigh Road, S.W.16. (Arch., Bot., Geol.)
- 1936 Burd, L. H., Westminster School N.H. Society, Dean's Yard, S.W.1. (Ecol., Ent., Orn.)
- 1930 \*Burgham, Miss J. E., 2 Nevern Place, S.W.5. (Geol., Orn., R.)
- 1915 Burkill, H. J., M.A., F.R.G.S., 3 Newman's Court, Cornhill, E.C.3. (Bot., Ecol., Geol., Lep., Orn., Pl. G., R.)
- 1943 Burt, Miss E. H., 40 Bellfield Avenue, Harrow Weald, Middx.



- 1946 Butcher, J., 1 Sandy Way, Shirley, near Croydon, Surrey. (Ent.)
- 1937 Butlin, Capt. J. H., c/o 90 East Sheen Avenue, S.W.14. (Orn.)
- 1935 Butterworth, Miss M. H., Benrose, King Street, Warminster, Wilts. (Bot., Ecol., Orn.)
- 1938 Buxton, Miss L. R., Easneye, Ware, Herts. (Orn.)
- 1932 Caiger-Smith, Miss J., Denison House, Little Gaddesden, Berkhamsted, Herts. (Orn.)
- 1946 Calver, W. H. N., Westmoor House, George Green, Slough. (Orn.)
- 1938 Calvert, G. W., 77 Abbot's Road, Abbot's Langley, Herts.
- 1928 \*Campbell, J. M. H., M.D., 47 Arkwright Road, N.W.3. (Orn.)
- 1912 Capleton, A., Golfer's Club, 2a Whitehall Court, S.W.1. (Bot., Ecol., Mam., Orn., R.)
- 1936 Carrington, L. I., The Grey Cottage, Chipstead, Surrey. (Ecol., Ent., Orn., R.)
- 1933 Carter, J. S., Ph.D., M.Sc., F.I.C., 26 St John's Road, N.W.11. (Orn.)
- 1939 Carter, N. W. J., 1 Wood Street, East Grinstead, Sussex. (Ecol., Ent.)
- 1932 Castell, C. P., B.Sc., 52 Graham Road, S.W.19. (Bot., Conch., Ecol., Geol., Orn.)
- 1936 Cawkell, Capt. E. M., 6 Canute Road, Hastings, Sussex. (Orn.)
- 1946 Cawood, Miss H. M., Walthamstow Hall, Sevenoaks, Kent. (Orn.)
- 1945 Chalke, Mrs K. I. M., 20 South Drive, Cheam, Surrey. (Orn.)
- 1945 Chalke, S. H., 20 South Drive, Cheam, Surrey. (Orn.)
- 1946 Chambers, Miss R. C., 1 Manor Close, Mill Hill, N.W.7. (Orn.)
- 1930 Chandler, S. E., D.Sc., F.L.S., 59 Anerley Park, Penge, S.E.20. (Bot., Ecol.)
- 1946 Chapman, P. C., Charterhouse, Godalming, Surrey.
- 1945 Chattaway, Miss M. M., M.A., B.Sc., D.Phil., 70 Oakley Street, S.W.3. (Bot., Orn.)
- 1945 Christopher, Mrs C. O. E., 401 Howard House, Dolphin Square, S.W.1. (Bot., Orn.)
- 1931 Chubb, Sir Lawrence, 71 Eccleston Square, S.W.1. (R.)
- 1927 Clanchy, Mrs B. L., Westminster Bank, Harrow-on-the-Hill, Middx. (Orn., R.)
- 1927 Clanchy, D. H., Westminster Bank, Harrow-on-the-Hill, Middx. (Ecol., Orn., R.)
- 1929 Coates, Miss N. H., Woodhouse, Beaumont Road, S.W.19. (Bot., Orn.)
- 1904 Cockayne, E. A., M.A., D.M., F.R.C.P., F.R.E.S., 16 Westbourne Street, W.2. (Biol., Lep.)
- 1937 Cockburn, Major T. A., M.D., c/o Lloyds Bank Ltd., Barking, Essex. (Orn.)
- 1945 Cocks, E., 109 Riefeld Road, Eltham, S.E.9. (Amph., Mam., Rep.)
- 1925 Cocksedge, W. C., 10 St Mary's Avenue, Shortlands, Bromley, Kent. (Arch., Bot., Ecol., Geol., Orn.)
- 1929 Cocksedge, Mrs, 10 St Mary's Avenue, Shortlands, Bromley, Kent. (Arch., Bot., Ecol., Geol.)
- 1945 Cole, G. P., 19 Crossway, Bush Hill Park, Enfield, Middx. (Orn., Ecol.)
- 1907 Collenette, C. L., F.R.G.S., F.R.E.S., 15 Warren Avenue, Richmond, Surrey. (Api., Bot., Ecol., Ent., Orn.)
- 1932 Collenette, Mrs C. L., 15 Warren Avenue, Richmond, Surrey. (Orn.)
- 1936 Collett, R. L., 165/20 Abbey Road, N.W.8. (Orn.)
- 1934 Collings, Mrs M., 36 Alfriston Road, S.W.11. (Ent., R.)
- 1946 Colyer, C. N., 8 Canning Court, Newnham Road, N.22. (Ent., esp. Dipt.)
- 1914 Connoll, Miss E., 40 Ritherdon Road, S.W.17.
- 1904 Cooke, Rev. P. H., B.A., 22 Barnett Wood Lane, Ashted, Surrey. (Arch., Bot.)
- 1938 Cooper, J. M., c/o Fairview, Higher Drive, Purley, Surrey. (Orn.)
- 1945 Cornelius, L. W., 22 Mosslea Road, Whyteleafe, Surrey. (Zoo.)
- 1942 Cramp, S., c/o 12 Valley Road, Bramhall, Cheshire. (Orn.)
- 1937 Crispin, G. H., Meadowcroft, Abbot's Langley, Herts.
- 1927 Cross-Rose, F., 20 Woolstone Road, S.E.23. (Orn.)
- 1892 Culpin, M., M.D., F.R.C.S., Fairview, Semaphore Road, Guildford. (Biol.)
- 1946 Cunha, Roy da, 2 Grove House, Epsom, Surrey. (Orn.)
- 1928 Cunningham, Miss D. W. M., Milford Cottage, Milford, Godalming, Surrey. (Bot., Ecol., Ent., Orn., Pl. G.)
- 1930 Cunningham, J., M.B.O.U., Fern Hill, Belfast. (Orn.)

- 1936 Currie, P. W. E., 102 Burdon Lane, Belmont, Sutton, Surrey. (Ecol., Ent., Orn.)
- 1946 Curtis, Miss M., 35 Philbeach Gardens, S.W.5. (Orn.)
- 1943 Cyprian, Miss N. A., 2 Hadden Way, Greenford, Middx. (Bot.)
- 1892 Cyriax, R. C., 23 Aberdare Gardens, N.W.6. (Arch., Aryan question, Indo-European languages.)
- 1936 Daffarn, J. D., c/o 20 Woodside Avenue, N.6. (Orn.)
- 1946 Dales, R. P., 67 Westmorland Avenue, Squirrels Heath, Essex. (Ecol., Ent., Orn.)
- 1920 \*Dallas, J. E. S., 29 Clinton Road, Leatherhead, Surrey. (Arch., Bot., Ecol., Orn., Pl. G., R.)
- 1925 \*Dallas, Mrs Rosa F., 29 Clinton Road, Leatherhead, Surrey. (Arch., Bot., Ecol., Geol., Orn., R.)
- 1940 Darlington, Miss I., M.A., 39 Craven Avenue, W.5. (Arch., Bot., Orn.)
- 1933 Davies, Miss E. B., Graffham, Petworth, Sussex. (Ent., Orn.)
- 1944 Davies, Mrs I. W., 147 Coleherne Court, Redcliffe Gardens, S.W.5. (Bot., Orn.)
- 1945 Davies, S. H., 8 Crescent Parade, Hillingdon, Middx. (Orn.)
- 1932 Davis, Miss R., c/o 118 College Road, S.E.21. (Orn., R.)
- 1946 Day, P. R., 36 Templeton Avenue, Chingford, E.4. (Bot.)
- 1926 Deane, Miss M. B. H., Box 36, B.P.O., Tangier, Morocco. (Orn.)
- 1939 De Bosdar, C. D., R.A.F. Station, Hemswell, Lincs.
- 1910 Dell, F. G., 55 Russell Road, Buckhurst Hill, Essex. (Micr., Orn., P.L.)
- 1939 Devenish, L. R., 23 Grosvenor Road, East Grinstead, Sussex. (Ecol., Lep.)
- 1945 Dickson, J. W., The Middlesex Hospital, Mortimer Street, W.1. (Bot., Photogr.)
- 1933 Doran, F. H., 22 Wilfred Street, Westminster, S.W.1. (P.L.)
- 1945 Dorée, Dr Charles, Longroof, Hervines Road, Amersham, Bucks. (Ent., Orn.)
- 1944 Douglas, R. I., 408 Northborough Road, S.W.16. (Ecol., Geol., Herpetology.)
- 1928 Douglas-Smith, Miss K., 19 Thurlow Road, N.W.3. (Arch., Bot., Ecol., Orn.)
- 1942 \*Duffin, C. J., M.B.O.U., 26 Mount Ephraim Road, Streatham, S.W.16. (Orn.)
- 1946 Eades, T. L., 8 Rossdale Road, Putney, S.W.15. (Arch., Bot., Orn., Geol.)
- 1934 Eales-White, Major J. C., T.D., F.R.E.S., F.Z.S., Squirrel Wood, Seven Hills Road, Cobham, Surrey (Arch., Ent., Orn.)
- 1944 Easton, A. M., M.B., B.S., Roadside Cottage, Lower Road, Great Bookham, Surrey. (Col.)
- 1944 Edgington, P. G., 2 Minterne Avenue, Norwood Green, Southall, Mx. (Orn.)
- 1945 Edwards, V. A., 75 Barn Hill, Wembley Park, Middx. (Ecol., Orn.)
- 1936 Ellington, Miss M. L., 1st London Motor Co., Cam House, Campden Hill, W.8. (Orn.)
- 1936 Ellis, W. G., 55 Mostyn Avenue, Llandudno, N. Wales. (Orn.)
- 1939 Elphinstone, K. V., Artillery Mansions, S.W.1. (Orn.)
- 1928 Emberson, L. M., African and Eastern (Near East) Ltd., P.O. Box No. 1, Basra, Iraq. (Ecol., Orn.)
- 1927 English, Miss F., 8 Dorville Crescent, Ravenscourt Park, W.6. (Arch., Bot., Orn., R.)
- 1944 Eustace, Miss W., Bedford College, N.W.1. (Fr. Water Ecol.)
- 1937 Evans, H. J., B.Sc., Jesemin, Amersham Road, Little Chalfont, Bucks. (Arch., Geol., Orn.)
- 1942 Evans, L. R., c/o 35 Champion Grove, S.E.5. (Orn.)
- 1943 Evans, Miss M. E., Little Brockholt, Capel, Surrey. (Ecol.)
- 1945 Eyden, Rev. M. J., B.A., Quainton Hall School, Harrow, Middx. (Orn.)
- 1907 Eynon, L., B.Sc., F.I.C., 8 Hall Lane, Upminster, Essex. (Chem.)
- 1935 Farquharson, A., Le Play House, Albert Road, Malvern. (Ecol.)
- 1939 Faulkner, Miss A. M. G., 127 Lower Richmond Road, S.W.14. (Arch., Orn., R.)
- 1945 Finneron, Miss M., 80 Wavertree Court, Streatham Hill, S.W.2.
- 1944 Firth, F., 193 Farley Road, Selsdon, Surrey. (Orn.)
- 1944 Firth, F. M., 193 Farley Road, Selsdon, Surrey. (Orn.)
- 1927 Fisher, Mrs G. L., 41 Milton Court, Ickenham, Middx. (Arch.)
- 1937 Fisher, J. M. McC., M.A., F.L.S., M.B.O.U., Old Rectory, Ashton, Northampton. (Ecol., Orn.)



- 1939 Fitter, Mrs M. S., 39 South Grove House, N.6. (Ecol., Orn.)
- 1934 Fitter, R. S. R., B.Sc. (Econ.), F.Z.S., M.B.O.U., 39 South Grove House, N.6. (Ecol., Orn.)
- 1946 Ford, H. K., Medical Superintendent's House, St Stephen's Hospital, Chelsea, S.W.10. (Arch., Ecol., Ich., P.L.)
- 1936 Forrester, Mrs C. E., Sesame Imperial and Pioneer Club, 49 Grosvenor Street, W.1. (Arch., Orn.)
- 1939 Forty, E. W., 22 Medina Avenue, Hinchley Wood, Esher, Surrey. (Orn.)
- 1937 Fossey, H. B., 13 Abercorn Gardens, Bailey Lane, Romford, Essex. (Orn.)
- 1924 Foster, J. B., B.A., 12 Conway Road, S.W.20. (Orn.)
- 1935 Foster, Mrs J. B., 12 Conway Road, S.W.20.
- 1945 Foster, Miss K. E., 8 Herne Hill, S.E.24. (Ecol., Bot.)
- 1944 Fox, Prof. H. Munro, F.R.S., 27 Sussex Place, N.W.1. (Bot., Fr. Water Ecol., Geol., Orn.)
- 1946 Fox, M. H., c/o National Bank Ltd., 3 High Street, Cardiff.
- 1938 Franks, Miss H., 21 Queen Square House, W.C.1. (Arch., Bot., Ecol., Orn., R.)
- 1931 Frederick, Miss L. M., M.Sc., F.Z.S., Whitelands College, West Hill, Putney, S.W.15. (Ecol., Orn., P.L., R.)
- 1935 French, W. A., Brook Barns, Chigwell, Essex. (Bot., Orn.)
- 1945 Fudge, Miss E. M., 6 Pickhurst Rise, West Wickham, Kent. (Ecol.)
- 1946 Gadsby, Miss D. M., 29 Heathurst Road, Sanderstead, Surrey.
- 1939 Garrett, V. R., M.A., M.B.O.U., 15 The Pryors, East Heath Road, N.W.3. (Orn.)
- 1932 Garrido, A. S., c/o 140 Barlow Moor Road, W. Didsbury, Manchester, 20. (Bot., Ecol., Geol.)
- 1933 Gaster, H., Lloyds Bank Ltd., 222 Strand, W.C.2. (Bot., Orn., R.)
- 1910 Gaze, W. E., 10 The Avenue, Highams Park, E.4. (Bot., Chem., Lep., Orn.)
- 1939 Gibson, Miss A., M.D., Section 8, St Thomas's Hospital, Hydestile, near Godalming, Surrey. (Orn.)
- 1939 Gibson, Mrs G. M., 26 Gilston Road, S.W.10. (Bot., Orn.)
- 1945 Gilchrist, Miss B. M., 43a St John's Wood High Street, N.W.8. (Ecol., Orn.)
- 1946 Giles, C. E., 106 Woodstone Avenue, Stoneleigh, Surrey. (Orn.)
- 1931 Gillett, J. D., F.R.E.S., 72 Gayton Road, Harrow, Middx. (Ent., Rep.)
- 1933 Gillham, E. H., 19 Tennison Road, S.E.25. (Orn.)
- 1937 Gillingham, D. W., c/o 28 Roding Road, Loughton, Essex. (Orn.)
- 1945 Gladstone, P., Willowbrook End, Eton, Windsor. (Orn., Zoo.)
- 1942 Glanville, S. R. K., 53 North Road, N.6. (Orn.)
- 1910 Glegg, W. E., F.Z.S., M.B.O.U., The Zoological Museum, Tring, Herts. (Orn.)
- 1934 Godwin, C., 20 Canonbury Park North, N.1. (Orn.)
- 1934 Godwin, Mrs M. L., 20 Canonbury Park North, N.1. (Orn.)
- 1944 Golding, Miss L., Bloomsbury House Club, 34 Cartwright Gardens, W.C.1.
- 1945 Goldney, C. Le B., 30 Hylda Court, St Albans Road, N.W.5.
- 1945 Goldney, Mrs N., 30 Hylda Court, St Albans Road, N.W.5. (Orn., Bot.)
- 1929 Goodfellow, Miss L., Flat 3, 7 Lyndhurst Gardens, N.W.3. (Orn.)
- 1930 Goodwin-Vanner, R. E. F., F.R.S.A., F.R.H.S., Essex Villa, Guildford, Surrey. (Arch.)
- 1939 Goom, Miss E. M., 78 Elmfield Avenue, Teddington, Middx. (Orn.)
- 1946 Goom, Miss N., 78 Elmfield Avenue, Teddington, Middx. (Orn.)
- 1944 Gould, A., 185 New Haw Road, Addlestone, Surrey. (Orn.)
- 1942 Gould, H. G., 35 Bergholt Avenue, Ilford, Essex. (Orn.)
- 1934 Gray, Miss J. W., 10 Canford Road, S.W.11. (Arch., Bot., R.)
- 1937 Green, D. B., Church Cottage, Church Hanborough, Oxon. (Orn.)
- 1927 Green, R., F.Z.S., Ruskin Studio, 7 New Court, Lincoln's Inn, W.C.2, and 84 Elgin Road, Seven Kings, Essex. (Orn.)
- 1939 Greenfield, Lt. H. F., R.A., 18 Stuart Road, Warlingham, Surrey. (Orn.)
- 1899 \*Greenwood, Prof. M., D.Sc., F.R.S., F.R.C.P., Hillcrest, Church Hill, Loughton, Essex. (Arch., Biol.)
- 1945 Griffin, Mrs E. M., 1 Park Hall, Crooms Hill, Greenwich, S.E.10.
- 1928 Griffin, Miss M., 22 Addison Way, N.W.11. (Orn.)
- 1920 Grinling, C. H., B.A., Redroofs, Peaslake, Guildford, Surrey. (Bot., Ecol.)
- 1937 Guichard, K. M., c/o 10 Lyndhurst Gardens, N.W.3. (Bot., Ecol., Ent., R.)
- 1945 Guildhall Library, E.C.2.

- 1945 Gurteen, M., Honiley, Balcombe Road, Horley, Surrey. (Orn., Bot.)
- 1927 \*Hale, R. W., 6 Grendon Gardens, Wembley Park, Middx. (Bot., Ecol., Orn.)
- 1946 Hall, Dr Marjorie K., 16 Pilgrims Lane, Hampstead, N.W.3. (Orn.)
- 1944 Hammond, Miss Q., 21 Kitchener Road, E.17. (Bot.)
- 1903 Hanbury, F. Capel, Westfield, Hoddesdon, Herts. (Lep.)
- 1946 Hansford, S. H., 29 Brunswick Gardens, Kensington, W.8. (Arch., Bot.)
- 1946 Hansford, Mrs S. H., 29 Brunswick Gardens, Kensington, W.8. (Arch., Bot.)
- 1897 \*Hanson, P. J., Burcroft, Village Road, Bush Hill Park, Middx. (Arch., Ecol., Orn., R.)
- 1944 Hardcastle, Miss S. M., Bedford College, N.W.1. (Fr. Water Ecol.)
- 1927 Hardiman, Miss A., Hyron's Cottage, Woodside Road, Amersham, Bucks. (R.)
- 1921 Hardiman, J. P., C.B.E., B.A., Hyron's Cottage, Woodside Road, Amersham, Bucks. (Orn.)
- 1942 Harris, L. F., 30 Ellis Avenue, Rainham, Essex. (Orn.)
- 1943 Harrison, D. L., F.Z.S., Bowerwood House, St Botolph's Road, Sevenoaks, Kent. (Biol., Orn.)
- 1942 Harrison, J. L., A.R.C.S., B.Sc., F.R.E.S. (Capt., R.A.S.C.), 93a High Street, S.W.19. (Ecol., Ent.)
- 1945 Hartridge, Miss M. R., 94 Canberra Road, Charlton, S.E.7. (Orn., Bot.)
- 1944 Haskell, G., 25 Tring Avenue, W.5. (Bot., Ecol.)
- 1935 Hatch, R. S., c/o 66 Coston's Avenue, Greenford, Middx. (Orn.)
- 1939 Haviland, Mrs B., 8 Sloane Terrace Mansions, S.W.1. (Bot.)
- 1939 Haviland, Miss D. M., 8 Sloane Terrace Mansions, S.W.1. (Orn.)
- 1938 Haviland, Miss G. M. B., 8 Sloane Terrace Mansions, S.W.1. (Orn.)
- 1930 Haworth, Miss F. M., B.Sc., F.Z.S., Grove House, Roehampton Lane, S.W.15. (Bot., Zoo.)
- 1946 Hayman, R. W., "Timbers," 32a Hazlewell Road, Putney, S.W.15. (Mam., Orn.)
- 1937 Hayward, H. H. S., 60 Ridge Crest, Enfield, Middx. (Orn.)
- 1927 Hayward, Lt. J. F., Ph.D., M.Sc., F.G.S., c/o 29 Mount Echo Drive, E.4. (Geol., Zoo.)
- 1946 Hearn, Miss D. B., 56 Meadvale Road, Ealing, W.5.
- 1902 Heath, G. H., M.A., 3 Bolney Court, Portsmouth Road, Surbiton. (Lep.)
- 1946 Hepburn, Miss E. M., Clarence Lodge, Hampton Court, E. Molesey, Surrey. (Orn.)
- 1940 Hick, C. E. St C., Larkfield, Bracknell, Berks. (Lep.)
- 1946 Hicks, P. Yelverton, M.B.B.S., F.Z.S., Hayes Barton, Totteridge Lane, Totteridge, Herts. (Bot., Ent., Orn.)
- 1938 Highway, Mrs H., 38a Shortlands Road, Bromley, Kent. (Bot., Orn.)
- 1946 Hill, F. L., 24 Westland Drive, Hayes, Bromley, Kent. (Bot., Orn., Lep.)
- 1946 Hill, H. M., 71 Ellison Road, Streatham, S.W.16. (Arch.)
- 1936 Hilliard, R., c/o 5 Oakleigh Gardens, Edgware, Middx. (Ecol., Ent.)
- 1946 Hillman, Miss E. M., 16 Exford Road, Grove Park, S.E.12. (Orn.)
- 1938 Hindson, M. T., 11 Holland Park, W.11. (Ecol., R.)
- 1944 Hobhouse, Miss D., 82 Vincent Square, S.W.1. (Orn.)
- 1938 Hodge, Mrs E. M., 62 Roseneath Road, S.W.11. (Arch.)
- 1937 Hodge, G. A., 62 Roseneath Road, S.W.11. (Orn.)
- 1937 Höhn, E. O., B.Sc., Dept. of Physiology, Medical School, Guy's Hospital, S.E.1. (Ecol., Orn.)
- 1945 Hollom, P. A. D., Rolvenden, Hook Heath, Woking, Surrey. (Orn.)
- 1944 Holroyde, F. J., 13 Denbridge Road, Bickley, Kent. (Orn.)
- 1932 Homes, R. C., c/o Park Cottage, Wisborough Green, near Billingshurst, Sussex. (Ecol., Orn.)
- 1930 Hopkins, Lieut. G., c/o Braemar, Sandy Lodge Way, Northwood, Middx. (Ecol., Orn.)
- 1944 Horeman, T. J., 104 Kilmore Road, S.E.23. (Ent., Orn.)
- 1919 Horn, P. W., 55 Lake Rise, Romford, Essex. (Aqua., Orn.)
- 1905 Hornblower, A. B., 91 Queen's Road, Buckhurst Hill, Essex. (Api., Arch., Ecol., Orn., R.)
- 1933 House, F. C., c/o 294 Footscray Road, S.E.9. (Ecol., Orn., R.)
- 1945 Howlett, Mrs F. M., Rosemount, Peck's Hill, Nazeing, Essex. (Arch., Geol.)



- 1945 Howlett, V. G. A., Rosemount, Peck's Hill, Nazeing, Essex. (Arch., Geol.)  
 1941 Hoy, K. E., 5 Beverley Crescent, Woodford Green, Essex. (Ent., Orn.)  
 1945 Hoyle, Miss D. M., 61 Danescroft, Brent Street, Hendon, N.W.4. (Ecol., Orn.)  
 1946 Hubbard, A. E., 54 Blakes Lane, New Malden, Surrey. (Bot., Orn.)  
 1938 Hurcomb, Sir Cyril, K.B.E., C.B., 47 Campden Hill Court, W.8. (Orn.)  
 1939 Hussey, N. W., c/o Penwarne, Stonewall Park Road, Langton, Tunbridge Wells, Kent. (Hym., Orn.)  
 1937 Hussey, S. V., F.R.E.S., 40 Flanchford Road, W.12. (Bot., Orn., R.)  
 1945 Hutchings, C. E., 38 Lancefield Street, Queen's Park, W.10. (Orn.)  
 1946 Hutson, Maj.-Gen. H. P. W., M.B.O.U., 130 Queen's Gate, S.W.7. (Orn.)  
 1930 Hutton, Miss R. E., Lytton Lodge, Codicote, Hitchin, Herts. (Bot., Zoo.)  
 1946 Inglis, Mrs G. I., 34 West Hill Court, Millfield Lane, N.6. (Orn.)  
 1945 Izzard, W. P., 180 Woodhouse Road, North Finchley, N.12. (Orn.)  
 1946 Janes, Miss E. N., 2 Stone Road, Bromley, Kent. (Orn.)  
 1943 Janvrin, J. P., c/o Middlesex Hospital Medical School, W.1. (Orn.)  
 1945 Jardine, Miss D. A., 33 Cranborne Road, Potters Bar, Middx. (Orn.)  
 1927 Jeffery, H. J., A.R.C.S., F.L.S., 14 Coppetts Road, N.10. (Bot.)  
 1929 Johns, Miss F. E., 30 Mt. Stewart Avenue, Kenton, Middx. (Bot., Orn., R.)  
 1933 Johns, Miss L. J., 87 Morley Hill, Enfield, Middx. (Arch., Bot., Ecol., Orn., R.)  
 1946 Johnson, Miss E. E., 7 Links Road, Woodford Green, Essex. (R.)  
 1944 Johnson, P., F.Z.S., 17 The Pryors, East Heath Road, N.W.3. (Orn., Zoo.)  
 1931 Johnston, F. J., West Park, Sidmouth, Devon. (Ecol., Orn.)  
 1939 Jones, H. O., 49 Eaton Road, Sutton, Surrey. (Orn.)  
 1945 Jones, Mrs I., 14 Gordon Square, W.C.1. (Bot., Orn.)  
 1899 \*Kaye, W. J., F.R.E.S., Chantrey Lodge, Longdown, Guildford, Surrey. (Lep.)  
 1945 Kelleway, Mrs D. M., 20 The Pryors, Hampstead, N.W.3. (Orn.)  
 1942 Kemp, Mrs M. M., 33 Ellerton Road, S.W.18. (Orn.)  
 1945 Kennedy, Miss M. E., 62 Lordship Road, Stoke Newington, N.16. (R.)  
 1944 Kent, D. H., 75 Adelaide Road, W. Ealing, W.13. (Bot., Chem., Ecol.)  
 1934 Kerr, Mrs H. M. Rait-, 22 Elm Tree Road, N.W.8. (Arch., Ecol., Orn.)  
 1936 Keywood, K. P., Croft Cottage, Hare Lane, Claygate, Surrey. (Ent., Orn.)  
 1930 King, Miss C. A., M.D., 8 Lancaster Drive, N.W.3. (Arch., Orn., R.)  
 1946 King, J. E., c/o 107 Swan Court, Chelsea Manor Street, S.W.3. (Orn.)  
 1945 King, J. M. B., 23 Lyncroft Gardens, West Ealing, W.13. (Mycol.)  
 1946 Knipe, P. R., 24 Capthorne Avenue, Harrow, Middx. (Orn.)  
 1945 Koster, D., 19 The Pryors, Hampstead, N.W.3. (Orn., Bot., Ichth.)  
 1941 Kramer, J. A., 23 Clifton Avenue, N.3. (Orn.)  
 1943 Larkin, Mrs E. (address not known). (Bot.)  
 1944 Larsen, R. T. F., 370, Finchley Road, N.W.3. (Orn.)  
 1945 Leatherdale, Mrs J., "Tasli," Hawks Hill, Leatherhead, Surrey. (R.)  
 1930 Ledlie, R. C. B., M.B., B.Sc., F.R.C.S., 64 Harley Street, W.1. (Bot., Orn.)  
 1928 Lee, Miss M., 22 Addison Way, N.W.11. (Orn.)  
 1922 Lemon, Mrs M. L., M.B.E., J.P., F.R.G.S., F.R.S.A., F.Z.S., M.B.O.U., Hillcrest, Redhill, Surrey. (Orn.)  
 1946 Levy, Miss R. F., 28 New End, Hampstead, N.W.3. (Orn.)  
 1937 Lewer, F. A., Jalna, Cobham Road, E. Horsley, Surrey. (Orn.)  
 1946 Lewis, Miss E. A., M.Sc., Ph.D., Southlands College, 65 Wimbledon Park Side, S.W.19. (Bot., Ecol.)  
 1919 Leyton Public Libraries (E. Sydney, F.L.A.), Central Library, E.10.  
 1946 Lightly, J. M. F., 9 Westbourne Terrace, Paddington, W.2.  
 1944 Lindley, K. A., 9 Old Oak Road, W.3. (Lep., Orn.)  
 1927 Lister, Miss G., F.L.S., 871 High Road, E.11. (Bot., Orn.)  
 1926 \*Littlejohn, H. A., 55 Ethelbert Gardens, Ilford, Essex. (Bot., Orn., R.)  
 1934 Locket, G. H., M.A., M.Sc., 36 Gayton Road, Harrow, Mx. (Ecol., Ent.)  
 1944 Lockett, Lieut. J. H. (R.N.V.R.), St Anne's Cottage, Sheath Lane, Oxshott, Surrey. (Orn.)  
 1926 \*Longfield, Miss C. E., F.R.G.S., F.R.E.S., F.Z.S., M.B.O.U., 11 Iverna Gardens, London, W.8. (Bot., Ecol., Ent., Orn., R.)  
 1945 Longley, C. W., Lloyds Bank House, 40a Rosslyn Hill, Hampstead, N.W.3. (Orn., Bot.)

- 1945 Longley, Mrs S. H., Lloyds Bank House, 40a Rosslyn Hill, Hampstead, N.W.3. (Bot.)
- 1936 Lousley, J. E., 7 Penistone Road, S.W.16. (Bot., Ecol., Orn.)
- 1930 \*Low, G. Carmichael, M.A., M.D., F.R.C.P., F.Z.S., M.B.O.U., 7 Kent House, Kensington Court, W.8. (Orn., Zoo.)
- 1926 Lutwyche, Mrs A. N., 120 Mildred Avenue, Watford, Herts. (Orn., R.)
- 1938 MacAlister, D.A., c/o National Prov. Bank, 18 Cromwell Place, S.W.7. (Orn.)
- 1928 MacAlister, Mrs E. c/o Natl. Prov. Bank, 18 Cromwell Pl., S.W.7. (Bot., Orn.)
- 1937 \*McClintock, Major D., M.A., A.C.A., Bracken Hill, Platt, near Sevenoaks, Kent. (Bot., Orn.)
- 1945 McClintock, Miss M., 74 Walm Lane, N.W.2. (Bot., Orn.)
- 1935 McCulloch, Capt. G. K., c/o 65 Chester Road, Northwood, Middlesex. (Orn.)
- 1933 MacDonald, Rt. Hon. Malcolm J., M.P., c/o Upper Frognal Lodge, N.W.3. (Orn.)
- 1935 McDowell, Miss C. M., 19 Cambridge Park Court, E. Twickenham, Mx. (Bot., Orn., R.)
- 1939 McEwen, Miss E., 230 Kensington Close, W.8. (Orn.)
- 1945 McHoul, J., 76 Princes Court, Brompton Road, S.W.3. (Orn.)
- 1911 MacIntosh, Miss I. S., 3 Mayfield Road, E.4. (Arch., Bot.)
- 1911 MacIntosh, Miss J. D., 3 Mayfield Road, E.4. (Arch., Bot.)
- 1929 Mackay, Helen M. M., M.D., F.R.C.P., 7 Lyndhurst Gardens, N.W.3. (Orn.)
- 1937 McKeen, Mrs E., 15 Doughty Street, W.C.1. (Arch.)
- 1946 Mackintosh, W. H., 6 Enmore Road, S.W.15. (Arch., Bot.)
- 1932 Mackworth-Praed, C. W., F.R.G.S., F.Z.S., F.R.E.S., M.B.O.U., Castletop, Burley, near Ringwood, Hants. (Ent., Orn.)
- 1941 McMillan, A., L.R.C.S., L.R.C.P., Ivy House, New Romney, Kent. (Orn.)
- 1943 McNicol, G. F., 38 King's Road, Edmonton, N.18. (Bot., Orn.)
- 1943 McNicol, Mrs J. C., 38 King's Road, Edmonton, N.18. (Bot., Orn.)
- 1923 \*Macpherson, A. Holte, B.C.L., M.A., F.Z.S., 12 The Beacon, Exmouth, Devon. (Orn.)
- 1923 Mann, E., 10 Frankland Road, E.4. (Ecol., Orn., P.L.)
- 1934 Mann, F. R., M.C., Noreena, Ham Common, Surrey. (Orn.)
- 1934 Manser, G. E., Flodden House, Theydon Bois, Essex. (Bot., Ecol., Orn.)
- 1936 Manson-Bahr, Sir Philip H., C.M.G., D.S.O., M.A., M.D., F.R.C.P., M.B.O.U., F.Z.S., 149 Harley Street, W.1. (Orn.)
- 1934 \*Marchant, Miss R., 24 Longmeads, Rusthall, Tunbridge Wells, Kent. (Arch., Bot.)
- 1939 Marsh, Miss B. M., 35 Castlevew Gardens, Ilford, Essex. (Bot., Ecol., Ent., Orn.)
- 1944 Mason, Mrs U. C., 63 King's Road, Richmond, Surrey. (Bot., Mycol.)
- 1945 Maxwell, J. E. H., 78b Clare Road, Maidenhead. (Orn.)
- 1940 Mayo, R. W., Inaspinney, Oaklands, Welwyn, Herts. (Orn.)
- 1943 Mears, R. G., 14 Hampton Road, E.4. (Ent.)
- 1935 Melliush, W. D., c/o 56 Sunnyfield, N.W.7. (Ecol., Orn.)
- 1944 Mills, T. H. L., A.I.E.E., 82 Madrid Road, S.W.13. (Orn.)
- 1946 Mitchell, F. J. L., 298 Latymer Court, W.6. (Orn.)
- 1932 Mitchell, Miss M. I., 7 Penwerris Avenue, Osterley, Middlesex. (Bot., Orn.)
- 1938 Monk, J. F., c/o Kingsland House, Shrewsbury, Salop. (Orn.)
- 1946 Montieth, Mother M., Convent of the Sacred Heart, 28 West Hill, S.W.18.
- 1934 Morgan, D. A. T., 36 Redcliffe Square, S.W.10. (Ecol., Orn., R.)
- 1946 Morgan, E. W. A., Wandle Cottage, Meadow Road, Sutton, Surrey. (Bot., Orn.)
- 1937 Morton, Miss G. M., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)
- 1937 Mountfort, Lieut.-Col. G. R., M.B.O.U., c/o Vacuum Oil Co., Caxton House, Tothill Street, S.W.1. (Orn.)
- 1942 Mugele, G. F., 68 Connaught Avenue, E.4.
- 1945 Muir-Wood, Miss H. M., D.Sc., 13 Longridge Road, S.W.5. (Orn., Bot.)
- 1938 Mulholland, Rt. Hon. H., M.P., Speaker's House, Stormont, Belfast. (Orn.)
- 1937 Musselwhite, D. W., 136 Norfolk House, Highlands Heath, S.W.15. (Orn.)
- 1938 \*Myers, A. F., 43 Arkwright Road, N.W.3. (Orn.)
- 1936 Napper, Major R. P., R.A., F.Z.S., 24 Vernon Road, East Sheen, S.W.14. (Orn.)



- 1942 Nevinson, Mrs (Miss Evelyn Sharp), 2/23 Young Street, W.8. (Orn.)  
 1946 Newton, Dr R. G., 3 Albert Mansions, Church Road, Hove, 3. (Ecol., Orn.)  
 1926 Niblett, M., 10 Greenway, Wallington, Surrey. (Ent., Pl. G.)  
 1893 \*Nicholson, Miss B., 49 Danecourt Road, Parkstone, Dorset. (Bot.)  
 1934 Nicholson, E. M., M.B.O.U., 13 Upper Cheyne Row, S.W.3. (Ecol., Orn.)  
 1946 Noel, A. S., 42 Woodcote Road, Wanstead, E.11. (Orn., Ent., Bot.)  
 1946 Noel, Miss D., 32 Parkhill Road, N.W.3.  
 1928 Noel, Miss E. F., 37 Burnham Court, W.2. (Bot., Ent., Orn., Pl. G., R.)  
 1946 Norkett, A. H., 36 Hemsby Road, Chessington, Surrey. (Bot., Ecol.)  
 1934 Norris, C. A., M.B.O.U., 10 Warwick Road, Stratford-on-Avon, Warwickshire. (Ecol., Orn.)  
 1940 Norsworthy, H. H., 8 Balliol House, Manor Fields, S.W.15. (Orn.)  
 1937 O'Farrell, A. F., B.Sc., A.R.C.S., F.R.E.S., 15 Fitzwilliam Avenue, Ormeau Road, Belfast. (Ecol., Ent.)  
 1933 Oke, E. E., Tweenways, The Mount, Leatherhead, Surrey. (Ent., Orn., R.)  
 1937 Oldroyd, H., M.A., F.R.E.S., c/o British Museum (Natural History), S.W.7. (Ecol., Ent.)  
 1945 O'Neil, Mrs H. E., 32 Blomfield Road, W.9. (Orn.)  
 1946 Osborne, Miss D. J., 5 Upton Road, Bexleyheath, Kent. (Bot., Lep.)  
 1937 Owen, C. E., 30 Hamilton Road, Harrow, Middlesex. (Orn.)  
 1938 Paddington Public Libraries (H. J. W. Wilson, A.L.A.), Porchester Road, W.2.  
 1929 Page, Miss M. M., 22 Barnett Wood Lane, Ashted, Surrey. (Orn.)  
 1946 Page, W. M., 16 Lansdowne Road, Wimbledon, S.W.20. (Orn.)  
 1946 Page, Mrs W. M., 16 Lansdowne Road, Wimbledon, S.W.20. (Orn.)  
 1944 Panchen, A. L., 21 Rowan Road, S.W.16. (Ent., Rept.)  
 1938 Park, W. D., c/o 34 White Horse Drive, Epsom, Surrey. (Ecol., Orn.)  
 1925 \*Parmenter, L., F.R.E.S., 94 Fairlands Avenue, Thornton Heath, Surrey. (Bot., Ecol., Ent. (esp. Dipt.), Orn., Pl. G.)  
 1938 Parrinder, E. R., 27 Gwalior House, Chase Road, N.14. (Ecol., Orn., R.)  
 1938 Parrinder, Mrs E. R., 27 Gwalior House, Chase Road, N.14. (Ecol., Orn., R.)  
 1946 Parrott, R. T., 15 Barnfield Avenue, Shirley, Croydon, Surrey. (Orn.)  
 1945 Parsons, C. H. F., 37 Court Farm Road, Northolt, Greenford, Middx. (Orn.)  
 1921 Parsons, Lt.-Cdr. S. T. T., R.N.V.R., c/o Westminster Bank Ltd., 8 Borough High Street, S.E.1. (Orn.)  
 1944 Pashley, Miss M., 30 West Kensington Mansions, W.14.  
 1937 Patterson, H. G., 15 Queen's Gate Gardens, S.W.7. (Orn.)  
 1933 Paulson, C. W. G., M.B.O.U. Woodside Cottage, Wheeler's Lane, Smallfield, Surrey. (Orn.)  
 1923 Payne, E. M., Tilgate, Long Lane, Hillingdon, Middlesex. (Bot., Orn.)  
 1923 Payne, L. G., F.Z.S., 22 Marksbury Avenue, Richmond, Surrey. (Bot., Ecol., Ent.)  
 1942 \*Payne, R. M., c/o Footwear Control, 96 Regent Road, Leicester. (Ecol., Ent.)  
 1945 Paynter, W. B. C., 18 Courtfield Gardens, S.W.5. (Bot., Orn.)  
 1944 Payton, H. W., Lianda, Hill Close, Harrow, Mx. (Bot., Orn.)  
 1937 Pearce, E. W., 3 Berkeley House, Hampton, Mdx. (Orn.)  
 1935 Pearse, B. S. K., 74 Ashgrove Road, Goodmayes, Essex. (Bot., Ent., Orn.)  
 1946 Pearton, J. E., 90 Wentworth Road, Barnet, Herts. (Ent., Mam.)  
 1932 Pedler, E. G., 100 East Sheen Avenue, S.W.14. (Orn., R.)  
 1945 Pegram, D. C., 44 Combemartin Road, S.W.18. (Orn.)  
 1937 Peterken, J. H. G., 73 Forest Drive East, E.11. (Bot., Ecol., Orn.)  
 1944 Phillips, R., 1 Scutari Road. S.E.22. (Orn.)  
 1937 Philipson, W. R., 33 Park Avenue, Ruislip, Middlesex. (Orn.)  
 1942 Phillipson, Rev. C. Q. (Gone to India : address not known.) (Orn.)  
 1937 Piercy, K., Clifton Cottage, Clifton, Beds.  
 1943 Pilcher, Miss E. V., 65 Chester Road, Northwood, Mx. (Bot.)  
 1941 Pinks, R. S., 25 Parkdale Crescent, Worcester Park Surrey. (Orn.)  
 1931 Pinniger, E. B., F.R.E.S., 5 Endlebury Road, E.4. (Ecol., Ent., Orn., R.)  
 1927 Piper, Miss G. E. M., 12 Elms Road, Clapham, S.W.4. (Orn.)  
 1941 Pitt, Miss Frances, The Albynes, Bridgnorth, Salop. (Orn.)  
 1940 Plumptre, Miss H. M., The Hindles, Atherton, Lancs. (Bot., Orn.)

- 1935 Pollard, Mrs H. B., The Limes Cottage, Pilgrims Way, S. Croydon, Surrey. (Ecol., Orn.)
- 1925 Pooock, S. G., 65 Milton Road, Harpenden, Herts. (Ecol., Orn.)
- 1940 Poore, A. C. G., c/o 17 West Avenue, Wallington, Surrey. (Orn.)
- 1933 Popple, Miss W. N., Castle Rise, Castle Hill Avenue, Berkhamsted, Herts. (Ecol., Orn., P.L., R.)
- 1944 Potter, B. H., 9 The Island, Thames Ditton, Surrey. (Orn.)
- 1944 Prall, D. I. F., 11 Clarence Terrace, N.W.1. (Orn.)
- 1943 Priestley, Mrs J. B., B3 Albany, Piccadilly, W.1. (Orn.)
- 1945 Purdom, Mrs I., 14 Larkshall Crescent, Chingford, E.4.
- 1946 Pyle, F/O. M. A., 66 Gracefield Gardens, Streatham, S.W.16. (Orn.)
- 1943 Ralls, C. W., 2 Overdale, Dorking, Surrey. (Orn.)
- 1939 Rammell, Mrs E. M., 18 Fishpool Street, St Albans, Herts. (Orn.)
- 1945 Ramsden, Miss D. H., Nursing Staff, Royal Westminster Ophthalmic Hospital, High Holborn, W.C.1.
- 1939 Ratcliff, A. G., 39 Howard Road, Dorking, Surrey. (Orn.)
- 1934 Ratcliff, P. W., c/o 39 Howard Road, Dorking, Surrey. (Bot., Ecol., Orn.)
- 1938 Rawlence, D. A., Hill Top Cottage, Warboys Road, Kingston Hill, Surrey. (Orn.)
- 1934 \*Ray, Miss T., 24 Longmeads, Rusthall, Tunbridge Wells. (Arch., Bot.)
- 1945 Raynham, Miss M., 36 Villiers Avenue, Surbiton, Surrey. (Orn.)
- 1930 Reeve, Miss E. A., The Penn Club, 22 Bedford Place, W.C.1. (Bot., Ecol., Ent., Orn., R.)
- 1945 Reeves, C. A., 56 Ivanhoe Drive, Kenton, Middx. (Bot., Ent.)
- 1943 Richards, B. A., 29b St John's Avenue, S.W.15. (Orn.)
- 1925 Richardson, A., 2 Manor Road, Wheathampstead, Herts. (Ent., Orn.)
- 1940 Richardson, R. A., Birling Corner, Ratton Village, Willingdon, Sussex. (Orn.)
- 1943 Richter, J. H., 32 Pretoria Road, E.4. (P.L.)
- 1946 Ringer, Miss G. M., 193 Holly Lodge Mansions, Highgate, N.6.
- 1943 Rivers, J. S., Medical School, Middlesex Hospital, W.1. (Orn.)
- 1941 Robbins, Rev. R. A., Avebury Vicarage, Marlborough, Wilts. (Arch., Bot.)
- 1934 Roberts, J. E., B.Sc., Homewood, Kelsall, Cheshire. (Ecol., Orn.)
- 1940 Robinson, T. R., Flat 10, Linton House, Holland Park Avenue, W.11. (Orn.)
- 1938 Rommel, Miss D., The Orchard House, Bickley, Kent. (Arch., Orn.)
- 1937 Rose, C. C., 18 Draycott Avenue, Kenton, Middx. (Orn.)
- 1944 Rosenberg, R., Flat 103, Whitehall Court, S.W.1. (Mycol.)
- 1910 \*Ross, J., 23 College Gardens, E.4. (Pl. G.)
- 1945 Royston, Miss Edna, 42 Broad Walk, Kidbrooke, S.E.3. (Orn.)
- 1935 Rowan, J. D., 65 Haydn Avenue, Purley, Surrey. (Orn.)
- 1941 Rutherford, Mrs P., 82 Southgate Road, Potter's Bar, Middlesex. (Orn.)
- 1942 Ryall, R. H. M., 24 Stilecroft Gardens, Wembley, Middlesex. (Orn.)
- 1946 Ryall, Mrs R. H. M., 24 Stilecroft Gardens, Wembley, Middlesex. (Orn.)
- 1929 Sampson, E. S., 60 Alexandra Road, Epsom, Surrey. (Orn.)
- 1937 Scott, Miss E. M. P., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)
- 1937 Scott, G. B., c/o 6 Alan Road, S.W.19. (Geol., Orn.)
- 1937 Seth-Smith, D., F.Z.S., M.B.O.U., Brabourne, Poyle Road, Guildford, Surrey. (Orn.)
- 1945 Shaw, Miss M. B., 5a Old Town, Clapham, S.W.4.
- 1935 Shill, W. A., Barberries, Greenhurst Lane, Oxted, Surrey. (Bot.)
- 1929 Short, G. R. A., 36 Parkside Drive, Edgware, Middlesex. (Bot., Ecol., Micr., Pharmacognosy.)
- 1943 Siebert, W. F., Lakeside, Appledram, Chichester, Sussex. (Orn.)
- 1892 Simes, J. A., O.B.E., F.R.E.S., 75 Queen's Road, Loughton, Essex. (Ent.)
- 1943 Simmons, G. W., Town Close, 14 Millway, Mill Hill, N.W.7.
- 1945 Simons, Mrs N. C. B., 30 Hill Top, Hampstead Garden Suburb, N.W.11. (Orn.)
- 1945 Singleton, H. G. H., 29 Decoy Avenue, Golders Green, N.W.11. (Arch., Orn., R.)
- 1945 Singleton, S. H., 56 Harrowes Meade, Edgware, Middx. (Orn., Bot.)



- 1933 Skrimshire, E. H. N., F.R.A.I., F.Z.S., 5 Old Well House, N.6. (Arch., Orn., R.)
- 1940 Sladen, W. J. L., 28 Grove Way, Esher, Surrey. (Bot., Ecol., Ent., Orn.)
- 1946 Slowe, Miss W., 33 Stirling Avenue, Leigh-on-Sea, Essex.
- 1940 Smeed, J. A., 133 Cassiobury Park Avenue, Watford, Herts. (Orn.)
- 1946 Smith, A. H. V., 96 Berkshire Gardens, Palmers Green, N.13. (Orn., Bot.)
- 1935 Smith, Miss A. J., 55 West Avenue, N.3. (Orn.)
- 1944 Smith, D. C., 20 Carlton Avenue, Kenton, Middx. (Orn.)
- 1944 Smith, Miss E. E., 44 Glenloch Road, N.W.3. (Ecol. of Inland Waters.)
- 1943 Smith, I. B., U.C.H. Medical School, University Street, W.C.1. (Orn.)
- 1937 Smith, M. A., M.R.C.S., Lane End, Putney Heath Lane, S.W.15. (Amph., Rep.)
- 1945 Smith, Miss M. A., B.A., 9 Dinsdale Court, New Barnet, Herts.
- 1927 \*Solly, Miss B. N., 167 Old Brompton Road, S.W.5. (Orn.)
- 1944 Southam, E. V., c/o 12 Cloncurry Street, S.W.6. (Orn.)
- 1927 Southern, H. N., M.A., F.Z.S., Bureau of Animal Population, University Museum, Oxford. (Ecol., Orn.)
- 1944 Spencer, P. J., 12 The Pryors, E. Heath Road, N.W.3. (Orn.)
- 1937 Spicer, A. H., M.C., M.R.C.S., L.R.C.P., Graffham, near Petworth, Sussex. (Orn.)
- 1935 Spinney, G. H., B.A., East Hill Cottage, Copthorne, Crawley, Sussex. (Arch., Bot., Ecol., R.)
- 1922 Spooner, H., 21 Musgrave Crescent, S.W.6. (Arch., Bot., Ecol., Orn., R.)
- 1944 Spreadbury, W. H., 35 Acacia Grove, New Malden, Surrey. (Ecol.)
- 1944 Spurway, Miss H., Ph.D., Department of Biometry, University College, W.C.1. (Herpetology, Zoo.)
- 1946 Stanton, Miss H., 22 Bulingham Mansions, Pitt Street, W.8. (Orn.)
- 1945 Steele, B., 15 Sydney Road, Teddington, Middx. (Bot., Ecol.)
- 1946 Stokes, Miss I. K., Lodge Farm Nursery, Rugby Road, Dagenham, Essex.
- 1920 \*Stowell, H. S., L.R.I.B.A., Pirbright, Torland Road, Hartley, Plymouth. (Arch.)
- 1945 Stronge, R. J. T., 100 The Chase, Wallington, Surrey. (Ent., Mycol.)
- 1945 Sturrock, W. D., 17 Woodside Close, Tolworth, Surbiton, Surrey.
- 1930 Swayne, F. G., M.A., M.B., M.B.O.U., Ivy Hall Hotel, Crowborough, Sussex. (Orn.)
- 1945 Sweeney, R. C. H., 11 Normanton Road, South Croydon, Surrey. (Ent., Herpet.)
- 1944 Syms, E. E., F.R.E.S., 22 Woodlands Avenue, E.11. (Ent.)
- 1928 Talbot, G., F.R.E.S., 31 York Road, Woking, Surrey. (Lep.)
- 1946 Tarry, Miss J. E., Rosedene, Beet Sugar Factory, Sproughton, Ipswich.
- 1946 Taylor, G., 60 Heath Street, Hampstead, N.W.3. (Orn.)
- 1946 Taylor, J. M., 260 King's Road, Harrow, Middx. (Orn.)
- 1945 Teagle, W. G., 20 Wendover Road, Harlesden, N.W.10. (Orn.)
- 1943 Tenison, Lt.-Col. W. P. C., D.S.O., F.L.S., F.Z.S., 2 Wool Road, S.W.20. (Zoo.)
- 1920 Thomas, Mrs G. E., 9 Talbot Road, Isleworth, Middlesex. (Orn., R.)
- 1945 Thompson, A. J. B., 12 Lansdowne Avenue, Slough, Bucks. (Orn.)
- 1945 Thomson, W. W., M.B., Ch.B., 51 Norbury Court Road, S.W.16. (Orn.)
- 1939 Thornton, J. O., 6 Arterberry Road, S.W.20. (Orn.)
- 1944 Thrupp, Miss B., B.A., P.A.S.I., 39 Mitcham Park, Mitcham, Surrey. (Bot., Orn.)
- 1945 Tickner, Miss G. E., 15 Acacia Road, Hampton, Middx. (Bot., Orn.)<sup>4</sup>
- 1945 Titmas, Miss M., 479 Kensington Close, Wrights Lane, W.8. (Orn.)
- 1932 Todd, Miss G. E., 1 Orme Court, Bayswater Road, W.2. (Bot., Orn., R.)
- 1945 Toombs, H. A., British Museum (Natural History), Cromwell Road, S.W.7. (Bot., Geol., Orn.)
- 1934 Tours, H., 7 Briar Road, Kenton, Middx.
- 1892 Tremayne, L. J., F.Z.S., Grand Buildings, Trafalgar Square, W.C.2. (Arch., Bot., Lep., Orn., Pl. G., R.)
- 1908 Tremayne, Mrs L. J., Grand Buildings, Trafalgar Square, W.C.2. (Arch., Bot., Orn., R.)
- 1940 Trouton, Miss E. M., 31 Albert Bridge Road, S.W.11. (Orn.)
- 1940 Tucker, A. V., St Anne's, Bathurst Walk, Iver, Bucks. (Orn.)

- 1935 Tucker, D. G., Ph.D., 15 Gordon Avenue, Highams Park, E.4. (Ecol., Orn.)
- 1943 Tufnell, B., 14a Queensberry Place, S.W.7. (Orn.)
- 1944 Turner, D. H., 72 Mysore Road, S.W.11. (Orn.)
- 1931 Underwood, R. A., Greenways, Shoreham Road, Otford, Kent. (Orn.)
- 1937 Upton, Mrs P. V., Eveland Hall, Margaretting, Essex. (Orn.)
- 1935 Van Oostveen, Miss M. S., c/o 11 Gloucester Walk, W.8. (Ecol., Ent., Orn.)
- 1929 Venour, Miss D., Offley Place, Great Offley, Hitchin, Herts. (Ecol., Orn.)
- 1946 Vernon, R. M., 33 Temple Avenue, Shirley, Croydon, Surrey. (Orn.)
- 1938 Vesey-Fitzgerald, B. S., F.L.S., F.G.S., Murrayfield, Farnham, Surrey.  
(Ecol., Orn., Zoo.)
- 1933 Vincent, W. G., 154 Winchester Road, Hale End, E.4. (Orn.)
- 1941 Wagge, Miss L. E., 3 Arthur Street, King's Lynn, Norfolk. (Biol.)
- 1927 Waller, G., Taunton Dene, Sandyhurst Lane, Ashford, Kent. (Ecol., Ent.,  
Orn.)
- 1944 Walshe, Miss B. M., M.Sc., 27 Sussex Place, N.W.1. (Bot., Fr. Water Ecol.,  
Orn.)
- 1946 Walter, C. N., 32 Stanley Avenue, Beckenham, Kent. (Orn.)
- 1938 Warburg, G. O., 1 Woodside, Erskine Hill, N.W.11. (Orn.)
- 1943 Ward, Mrs A., 13 Chatham Road, E.17.
- 1925 Ward, B. T., 24 Long Deacon Road, E.4. (Bot., Ecol., Ent., Orn., Pl. G., R.)
- 1933 Ward, Miss I. W., 11 The Close, Southgate, N.14.
- 1943 Ward, Miss M., B.Sc., 13 Chatham Road, E.17.
- 1933 Ward, Miss M., M.B., Ch.B., Threeways, Jordans, Beaconsfield, Bucks.  
(Arch., Orn.)
- 1943 Ward, R. S., 66 Radbrooke Drive, Potters Bar, Middx. (Bot., Ecol., Orn.)
- 1946 Warren, R. B., 38 Athelstan Road, Harold Wood, Romford, Essex. (Orn.)
- 1941 Watson, R. L., 55 Redcliffe Gardens, S.W.10. (Bot., Orn.)
- 1936 Watt, E. C., 13 Park Road, N.W.1. (Orn.)
- 1925 \*Watt, Mrs W. Boyd, M.B.O.U., Cintra Lodge, Knole Road, Bournemouth,  
Hants. (Arch., Ecol., Orn.)
- 1938 \*Wattson, Miss A. E., 27 Woodhill Crescent, Kenton, Middx. (Ent., Orn.)
- 1939 Wattson, Mrs R. F., 27 Woodhill Crescent, Kenton, Middx.
- 1939 Wattson, R. F., 27 Woodhill Crescent, Kenton, Middx. (Ent.)
- 1945 Waymont, R., 34 Navarino Road, Worthing, Sussex. (Arch.)
- 1946 Weal, R. D., 124 Marmion Avenue, South Chingford, E.4. (Ent.)
- 1928 Weeks, C., 7 Ashmount Road, N.19. (Ecol., Orn., R.)
- 1945 Weibel, A., Snatt's Barn, Rockfield Road, Limpsfield, Surrey. (Ent., Orn.)
- 1944 Welch, Mrs B., 49 Lichfield Court, Richmond, Surrey. (Bot.)
- 1939 Welford, Miss A. M., 13 Clifton Avenue, N.3. (Orn.)
- 1945 Weston, Miss S. M., 34 Broadmead Road, Woodford Green, Essex. (Ecol.)
- 1935 Whitaker, F. O., 51 Grosvenor Avenue, Carshalton. (Bot., Ecol., Pl. G., R.)
- 1944 Whitaker, Miss M. B., B.Sc., F.Z.S., 264 Grange Road, S.E.19. (Zoo.)
- 1932 Whitbread, Miss W. H. E., 6 Meadow Way, Weald Village, Harrow, Middlx.
- 1937 White, C. A., 18 Townsend Road, Southall, Middx. (Orn.)
- 1933 White, E. I., D.Sc., Ph.D., F.G.S., 140 Westwood Road, Tilehurst, Reading,  
Berks. (Palaeontology, Orn.)
- 1944 White, T. G., 76 Priory Avenue, E.4. (Bot., Orn.)
- 1937 Wiggins-Davies, W. W., c/o Bracebridge, Four Oaks, Warwicks. (Orn.)
- 1934 Wightman, J. S., 2a Laverton Place, S.W.5. (Orn.)
- 1938 Wigram, A. F. (address not known). (Orn.)
- 1938 Wigzell, J. A., 17 Wool Road, S.W.20. (Ecol., Orn.)
- 1942 Wilkinson, J. S., B.A., A.C.A., F.R.H.S., 26 Golders Rise, N.W.4. (Bot.)
- 1936 Willcox, J. M. (Capt., R.A.M.C.), M.B., Ch.B., c/o The Moat House, Alve-  
church, Birmingham. (Orn.)
- 1946 Wilsher, W. G., 30 Harrington Gardens, Kensington, S.W.7. (Arch., Orn.)
- 1942 Wilson, D. S., 8a Beulah Hill, S.E.19. (Orn.)
- 1936 Wilson, J. M., M.B., B.S., R.A.M.C., Spinnerswood, Fawke Common, Seven-  
oaks, Kent. (Orn.)
- 1929 \*Wilson, Mrs M. M., 15 The Avenue, Bickley, Kent. (Bot., Ecol., Ent., Geol.,  
Orn., Pl. G., R.)



- 1938 Wilton, A. R., 262 Kingston Road, S.W.20. (Ecol., Orn., R.)  
 1946 Winble, L. H., 10 Broadoaks Way, Bromley, Kent. (Orn.)  
 1938 Winsloe, Mrs C. M., c/o Lloyds Bank Ltd., 18 Wigmore Street, W.1. (Orn.)  
 1937 Winters, Miss E. D. M., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)  
 1942 Wood, B., Vincent's Shaw, Chipstead, Surrey. (Orn.)  
 1946 Wood, S. B., 45 Carshalton Park Road, Carshalton, Surrey. (Orn.)  
 1944 Woolner, H. C., 6 Cunningham Avenue, St Albans, Herts. (Orn.)  
 1937 Worthington, Miss L. F., 104 Goldhurst Terrace, N.W.6. (Arch.)  
 1946 Wraight, F., Onslow Court Hotel, Queen's Gate, S.W.7. (Orn.)  
 1946 Wraight, Mrs W. A., Onslow Court Hotel, Queen's Gate, S.W.7. (Orn.)  
 1945 Wright, J. V., 55 Links Road Ashted, Surrey.  
 1922 Wright, W. A., 31 Beresford Road, E.4. (Orn.)  
 1945 Wrighton, F. E., 108 Manor Way, Ruislip, Middx. (Bot.)  
 1942 Wyatt, Miss E. M., c/o Post Office Savings Bank, W.14. (Orn.)  
 1937 Yarrow, I. H. H., M.A., Ph.D., D.I.C., F.R.E.S., Agricultural Advisory Offices, 7 Redlands Road, Reading, Berks. (Ecol., Ent.)  
 1942 Young, B. W., 15 St James's Mansions, N.W.6. (Bot., Orn.)

### Affiliated Societies.

- 1936 Tiffin Boys' School Scientific Society (Natural Science Section) (D. T. Humphris), Tiffin Boys' School, Kingston-on-Thames, Surrey. (Ecol.)  
 1936 Westminster School N.H. Society (L. H. Burd), Dean's Yard, S.W.1. (Ecol., Ent., Orn.)

### Branch Associates:

- 1943 Abbott, Miss E. J., 339 Hoe Street, E.17.  
 1945 Baker, C. E., 25 Sparelease Hill, Loughton, Essex. (Orn.)  
 1945 Barton, Miss P., 3 Howard Road, Church Hill, E.17.  
 1937 Bayes, C. S., 50 Pembroke Road, E.17. (Orn.)  
 1943 Beavis, G. H. S., 14 Fairlight Avenue, E.4.  
 1943 Beavis, Mrs M. H. W., 14 Fairlight Avenue, E.4.  
 1925 Boardman, S., 109 Monkham's Avenue, Woodford Green, Essex. (Mycol., Orn.)  
 1943 Boatman, D. J., 7 Hurst Road, Buckhurst Hill, Essex. (Biol., Bot., Ecol., Ent., Orn.)  
 1930 Brightman, Miss A., 80 Woodland Road, Chingford, E.4.  
 1945 Butler, Miss G. D., 11 Muswell Hill Road, N.10.  
 1945 Cane, Miss M., 78b Upper Walthamstow Road, E.17.  
 1944 Chambers, G. T., 27 Normanton Park, E.4. (Orn.)  
 1938 Chingford Branch County Library (E. Leyland, Librarian), Hall Lane, E.4.  
 1943 Dossetter, L. J., 11 York Road, E.17. (Orn.)  
 1944 Downing, Miss M. G., 290 Blackhorse Lane, E.17.  
 1943 Gravell, Miss V. E. W., 122 Selwyn Avenue, Higham's Park, E.4. (Orn.)  
 1920 Hart, Miss H., 7 Park Hill Road, E.4.  
 1944 Hassell, Miss S. M., 75 Derby Road, E.18. (Bot.)  
 1933 Hayward, P. D., 2 King's Green, Loughton, Essex. (Orn.)  
 1937 Hiles, Miss I. E., 32 Gordon Road, E.4.  
 1943 Hindell, Mrs F., 17 Larkshall Road, E.4. (Orn.)  
 1944 Hosking, Miss D., 63 Weston Park, Crouch End, N.8. (Bot., Orn.)  
 1944 Humphries, R. W., 26 Connaught Avenue, Loughton, Essex. (Bot.)  
 1942 Mansbridge, J. W., 11 Westbury Lane, Buckhurst Hill, Essex. (Ecol.)  
 1911 Mathieson, Miss M. L., 7 Crescent Road, E.4. (Meteorology.)  
 1934 Nicholson, E. T., 21 Holly Drive, E.4. (Ecol., Orn.)  
 1945 Patterson, P. J., 7 Cecil Road, Walthamstow, E.17. (Ent.)  
 1930 Penwarden, Miss C., 39 The Avenue, E.4.  
 1927 Pettit, Mrs S., 2 Victoria Road, E.4.  
 1927 Pettit, S., 2 Victoria Road, E.4.  
 1943 Pinniger, Mrs L., 5 Endlebury Road, E.4.

- 1944 Rattenbury, D. C., 9 Ingatestone Road, Woodford Green, Essex. (Lep.)  
 1943 Richter, Mrs F. G., 32 Pretoria Road, E.4.  
 1943 Round, E. A., 63 Mayfield Road, E.4.  
 1942 Rumsey, P. F. C., Park Farm Nursery, Sewardstone Road, E.4. (Orn.)  
 1946 St Egbert's College Natural History Society (Secretary, A. E. Catterall),  
 Chantry, The Ridgeway, Chingford, E.4. (Orn., Bot.)  
 1925 Saul, H. J. B., 12 Sandringham Court, Ipswich Road, Norwich.  
 1937 Smith, R. P., 22 Pelton Avenue, Belmont. Surrey. (Conch.)  
 1943 Spink, H. J., 26 Holly Drive, E.4.  
 1903 Stevenson, H. E., F.C.S., 24 Wilton Grove, S.W.19. (Chem.)  
 1945 Tucker, Mrs D. G., 15 Gordon Avenue, Higham's Park, E.4.  
 1942 Tucker, Mrs F., 31 Frederica Road, E.4.  
 1942 Tucker, J. F., B.Sc., 31 Frederica Road, E.4. (Bot.)  
 1942 Tucker, M. J., 31 Frederica Road, E.4. (Ecol.)  
 1942 Turner, Mrs L., 202 The Avenue, Higham's Park, E.4. (Orn.)  
 1944 Vere, D. W., 119 Grosvenor Gardens, Woodford Green, Essex. (Ent.)  
 1942 Walker, C. H., St Bartholomew's Hospital, W. Smithfield, E.C.1. (Orn.)  
 1944 Watson, Miss L. D., 9 Richmond Avenue, Higham's Park, E.4.  
 1942 Wheeler, A. C., 17 Neven Drive, E.4.  
 1944 Wiles, H., Mapledene, Alderton Hill, Loughton, Essex.

### Country and School Associates:

- 1941 Adolph, P. A., The Lodge, Ashurst Place, Langton Green, Tunbridge Wells,  
 Kent. (Orn.)  
 1944 Bain, Miss P. C., St Boswells, Dene Road, Northwood Mx. (Bot., Ecol.,  
 Ent., Mam., Orn.)  
 1941 Bale, D. W. D., Marsh Hill, Dulverton, Somerset. (Orn.)  
 1931 Benson, Mrs R. B., Dellfield, Featherbed Lane, Felden, Herts. (Bot., Orn., R.)  
 1939 Berry, P., M.D., 46 Magpie Hall Road, Chatham, Kent.  
 1943 Betteridge, H. W. G., 52 Newton Road, Tunbridge Wells, Kent.  
 1934 Biddlecombe, P. E., 30 Hill View Road, Orpington, Kent. (Arch.)  
 1896 Bishop, E. B., Lindfield, Marshall Road, Godalming, Surrey. (Arch., Bot.,  
 Orn., Pl. G.)  
 1908 Bostock, E. D., 8 Pelham Gardens, Folkestone, Kent. (Lep.)  
 1940 Breckin, Mrs E. M., 5 Linden Avenue, Blundell Sands, Liverpool, 23.  
 (Arch., Ecol., Mycol.)  
 1937 Bunker, H. E., 18 Abingdon Drive, Ashton, Preston, Lancs.  
 1933 Collett, G. W., 174 Sheldon Road, Chippenham, Wilts. (Bot., Ecol., Orn., R.)  
 1936 Colyer, W. L., Heybrook, Connaught Road, Sidmouth, Devon. (Ecol., Orn.)  
 1933 Darashah, Mrs E. G., 108 Stephens Road, Tunbridge Wells, Kent. (Arch.,  
 Bot., R.)  
 1938 Eardley-Wilmot, Mrs M., Avondale, New Chapel Road, Lingfield, Surrey.  
 (Bot., Orn.)  
 1945 Entrican, Miss M. C., Heatherton House School, Chesham Bois, Bucks. (Orn.)  
 1940 Fairhairn, D. C., M.C., M.B., B.Sc., L.R.C.P., M.R.C.S., c/o 48 Addison  
 Avenue, W.11. (Bot.)  
 1933 Ferrier, Miss J. M., F.Z.S., M.B.O.U., A.A.O.U., Hemsby, near Great Yar-  
 mouth, Norfolk. (Ecol., Orn.)  
 1933 Gibson, Miss E. M., Ashcroft, Station Road, Petersfield, Hants. (Lep., Orn.)  
 1944 Gladstone, Sir H. S., Capenoch, Penpont, Dumfries. (Orn.)  
 1944 Hager, Miss P. D., Langdale, Ashlyns Road, Berkhamsted, Herts. (Orn.)  
 1935 Harris, A. H., Silton, Loughborough Road, Ruddington, Notts. (Orn.)  
 1944 Harrison, R., 202 Seal Road, Sevenoaks, Kent. (Mycol., Orn.)  
 1940 Harvey, Pilot Officer A. A., 67 St Augustine's Avenue, Wembley Park, Middx.  
 (Orn.)  
 1927 Harvey, J. H., Half Moon Cottage, Little Bookham, Surrey. (Bot.)  
 1915 Hopkins, Prof. Sir F. Gowland, O.M., M.A., M.D., F.R.S., F.R.C.P., 71 Grange  
 Road, Cambridge. (Biochemistry.)  
 1936 Lamont, Mrs E. H., Marshalls, Chart Sutton, Maidstone, Kent. (Orn.)  
 1942 Law, Miss M. D. L., 19 Fengates Road, Redhill, Surrey. (Arch., Ecol.)



- 1935 Leatherdale, D., F.R.G.S., c/o Tasli, Hawk's Hill, Leatherhead, Surrey. (Bot., Ent., Geol., Pl. G., R.)
- 1936 Lewis, Miss M., Brincliffe, Osney Crescent, Paignton, S. Devon. (Arch., Bot., Ecol., Ent., Orn., R.)
- 1941 Lisney, A. A., M.A., M.D., F.R.E.S., The Red House, Narborough, Leicestershire. (Lep.)
- 1938 Lowe, Miss C. B. M., c/o Coutts & Co., 440 Strand, W.C.2. (Arch., Bot., Orn., R.)
- 1943 Lusty, E. J., c/o 83 Snakes Lane, Woodford Green, Essex. (Orn.)
- 1932 McKittrick, T. H., 7 Central Bahnstrasse, Basle, Switzerland. (Orn.)
- 1932 McKittrick, Mrs T. H., 7 Central Bahnstrasse, Basle, Switzerland. (Orn.)
- 1932 Mason, C. T., Mill Cottage, Gt. Shefford, Newbury, Berks. (Arch., Ent.)
- 1938 Mason, J. H., 134 Ryden's Way, Old Woking, Surrey. (Ent., Orn., R.)
- 1902 Miller, Miss M. E., The Croft, Rainsford Lane, Chelmsford, Essex. (Lep.)
- 1905 Moore, J. W., F.R.E.S., 151 Middleton Hall Road, King's Norton, Birmingham, 30. (Exotic Lep.)
- 1942 Moorhouse, S., Lyndale, Orchard Avenue, Bolton-le-Sands, Lancs. (Orn.)
- 1938 Muirhead, D., Malvern House, The Baulk, Worksop, Notts. (Ecol., Orn.)
- 1934 Munro, Miss M., Brown Clee, Hollybush Road, Cardiff. (Ecol., Orn.)
- 1946 Parmenter, Miss B. M., 94 Fairlands Avenue, Thornton Heath, Surrey. (Biol., Bot., Ecol., Ent., Mam., Orn.)
- 1929 Perry, Mrs M. D., 37 MacAlister Street, Mackay, Queensland. (Orn., R.)
- 1897 Pike, Oliver G., F.Z.S., M.B.O.U., F.R.P.S., The Bungalow, Leighton Buzzard, Beds. (Orn.)
- 1946 Pomeroy, Miss F. A., B.Sc., 110 Pembury Road, Tonbridge, Kent. (Arch., Bot.)
- 1927 Raikes, Miss D. T., Hên Ysgol, Bwlch, Breconshire. (Arch., Bot., Orn.)
- 1936 Shaw, G. A., c/o 12 Whitby Avenue, Hexham, Northumberland. (Bot.)
- 1928 Sparkes, Mrs F. M., 4 Loop Road, Kingfield, Woking, Surrey. (Arch., Bot.)
- 1943 Taylor, J. S., M.A., D.I.C., F.R.E.S., P.O. Box 45, Graaff Reinet, O.P., S. Africa. (Ent., Orn.)
- 1931 Thomas, Mrs P. I., Nightingales, Cobham Road, E. Horsley, Surrey. (Ecol., Orn., R.)
- 1942 Wales, Mrs M., Great Garden, Dartington, Totnes, Devon.
- 1945 Whellan, J. A., 11 Clive Avenue, Lytham St Annes, Lancs. (Bot., Orth.)
- 1944 Willcox, Mrs I. G., Huntercombe Manor, near Taplow, Bucks. (Ent., Orn.)
- 1929 Willcox, P. H., M.A., M.B., B.S., M.R.C.P., (Major, R.A.M.C.), Huntercombe Manor, near Taplow, Bucks. (Bot., Ent.)

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The following abbreviations are used in the above list of members:—Apl., Apiculture; Aqua., Aquaria; Arch., Archaeology; Ast., Astronomy; Biol., Biology; Bot., Botany; Chem., Chemistry; Col., Coleoptera; Conch., Conchology; Dipt., Diptera; Ecol., Ecology; Ent., Entomology; Ethn., Ethnology; Geol., Geology; Hem., Hemiptera; Hym., Hymenoptera; Ichth., Ichthyology; Lep., Lepidoptera; Mam., Mammals; Micr., Microscopy; Mycol., Mycology; Neur., Neuroptera; Orn., Ornithology; Orth., Orthoptera; Ool., Oology; Pl. G., Plant Galls; P. L., Pond Life; R., Ramblers' Section; Rep., Reptilia; Zoo., Zoology.

\* Signifies a Life Member.

PRESENTED

29 JUL 1946

## **PUBLICATIONS OF THE SOCIETY.**

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**London Naturalist**, 1921-24, 1931, each 3s; 1932, 1934-35, each 5s; 1936-45, each 3s 6d.

**London Bird Report**, 1936-37, 1939-45, each 1s 6d.

**Transactions of the London Natural History Society**, 1914-17, 1919-20, each 3s.

**Transactions of the City of London Entomological and Natural History Society**, 1891-1911, each 2s; 1912-13 (1 vol.), 3s.

Members may obtain any of the above from the General Secretary at two-thirds of the published price; years not quoted are out of print.

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### **" LONDON NATURALIST " REPRINTS.**

4. **The Thames as a Bird Migration Route.** President's Address, 1928, by W. E. Glegg, 6d.
  5. **Ornithological Records of the London Area** (1928), 4d.
  7. **The Birds of Middlesex since 1866.** President's Address, 1929, by W. E. Glegg, 1s.
  9. **British Gall Mites**, by H. J. Burkill (1929), 6d.
  10. **Some Diurnal Observations on the Nightjar**, by David Lack (1929) 6d.
  13. **Ornithological Records of the London Area** (1932), 3d.
  - 19-23, 25, 30. **The Survey of Limpsfield Common:** 1, 1937, 6d; 2, 1938 with map, 9d; 3, 1939, 6d; 4, 1940, 3d; 5, 1941, 6d; 6, 1942, 3d; 7, 1943, 2d.
  24. **Randolph William Robbins (1871-1941)**, 6d.
  29. 33, 35. **The Survey of Bookham Common:** 2, 1943, with maps, 4d; 3, 1944, with map, 9d; 4, 1945, 6d.
  - 27, 31, 34, 36. **The Epping Forest Survey:** 1, 1942, with map, 3d; 2, 1943, 6d; 3, 1944, with maps, 9d; 4, 1945, 6d.
  28. **The Starling Roosts of the London Area**, by R. S. R. Fitter (1942), 6d.
  32. **A Check-List of the Birds of the London Area**, by R. S. R. Fitter and E. R. Parrinder (1943), interleaved, 6d.
  37. **William Curtis (1746-1799)**, by J. E. Lousley (1945), 6d.
  38. **The Neuroptera of the Home Counties**, by E. B. Pinniger (1945), 6d.
  39. **Cynipid Flies and Galls on Oak**, by J. Ross (1945), 6d.
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**The Life of A. W. Bacot**, by Prof. Major Greenwood (1924) (ex Journal of Hygiene), 6d.

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All publications of the Society may be obtained from the General Secretary.



# LONDON NATURAL HISTORY SOCIETY.

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**T**HE Society is an amalgamation of the City of London Entomological and Natural History Society, founded in 1858, and the North London Natural History Society, founded in 1892.

Meetings are held on Tuesday evenings, either at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, or at the Hall of the Art Workers' Guild, Queen Square, W.C.1. The half-yearly syllabus should be consulted as to the venue of any particular meeting. The room is open from 6 p.m. to 9 p.m., and meetings begin punctually at 6.30 p.m. and end about 8.30 p.m., unless other arrangements are announced. The Library and Collections are available to members after meetings at the School of Hygiene.

The **Chingford Local Branch** meets at the Staff Recreation Room, Chingford Laundry, Chingford Green, at 2.45 p.m., on the first Saturday in each month during the winter months.

At all indoor meetings specimens of Natural History interest are exhibited, and papers on various subjects are read and discussed. Visitors may be introduced by members of the Society, and are cordially welcome. Frequent field meetings are held at week-ends, particulars of which are contained in the syllabus.

The minimum Annual Subscription for members is 12s 6d; if under 25 years of age the minimum is 7s 6d; for associates, 5s minimum. New members and associates pay an entrance fee of 2s 6d. Subscription renewals, which should be sent to the Treasurer, become due on January 1st. Members elected after October 1st pay no subscriptions for the current calendar year.

Each member and associate is entitled to one copy of *The London Naturalist* and *The London Bird Report* free; extra copies may be purchased by members, if supplies are available, at two-thirds of the published price.

Further information and syllabus may be obtained from the General Secretary:—**H. A. TOOMBS**, Dept. of Geology, British Museum (Natural History), Cromwell Road, S.W.7.











